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ABSTRACT

The results of this inquiry provide evidence that professional advances in education can be visibly demonstrated through programmatic research and development that produces useful educational products. The first opportunity to test the claim that important instructional outcomes may be reliably attained in a variety of school settings with a wide variety of students through use of a systematically developed educational product was provided by the arrangements under which the Kindergarten Program (KP) was used in 1972-73. KP was an outcome of an R&D program commitment pledged by the Southwest Regional Laboratory in 1965 to provide resources to enable schools to reliably teach youngsters to read, beginning in kindergarten, irrespective of the pupil's previous cultural and educational experience and excepting only those individuals with identified physical organic disabilities. The two-year KP inquiry was termed a "Quality Assurance" study. The measure involved in the inquiry paralleled the instruction that was being conducted, and each measure had a motivation for teachers that was intrinsic to instruction. A pretest was administered to each child at the beginning of the year to assess school-relevant proficiency upon entering kindergarten. Then for each program used in addition to KP--Instructional Concepts Program (ICP) and Beginning Reading Program (BRP)--teachers recorded completion dates and proficiency scores of pupils during instruction. At the end, posttests were administered. The results indicated that with well-developed instructional products (ICP and BRP), alleged biosocial deficiencies of students either prove fictional or readily circumventable. (MM)

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and the Effects of Schooling on Students:
Lessons from the First-Year Installation
of the SWRL/Ginn Kindergarten Program

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TECHNICAL REPORT 53

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THE EFFECTS OF PROGRAMMATIC R&D ON SCHOOLING AND THE EFFECTS OF
SCHOOLING ON STUDENTS: LESSONS FROM THE FIRST-YEAR INSTALLATION
OF THE SWRL/GINN KINDERGARTEN PROGRAM

Ralph A. Hanson and Richard E. Schutz

ABSTRACT

Previous attempts to identify specific effects of R&D on schooling and specific effects of schooling on students have been unsuccessful. The conclusion has been widely drawn that educational R&D is impotent in overcoming the alleged institutional deficiencies of American schools and that American schools are impotent in overcoming the alleged biosocial disadvantages of a large segment of the American population. The data presented here support radically different conclusions. They show that programmatic R&D exerted a reliable and dramatically positive effect on schooling and that the instructional attainments of pupils were highly sensitive to schooling differences. In general, the instructional accomplishments of pupils, classes, schools and districts who used instructional products from programmatic R&D were uniformly high, independent of the biosocial characteristics of the pupils, and the demographic characteristics of the schools. Where instructional proficiency differences did occur, they can be systematically accounted for by manipulable conditions readily under the control of schools rather than by immutable genetic and environmental conditions that inherently impede schooling. The inquiry supports a general conclusion that programmatic R&D has strong positive effects on schooling, and that schooling coupled with programmatic R&D has strong positive effects on students.

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Acknowledgements

The programmatic R&D from which this inquiry derives extends across ten years and involved in one way or another all SWRL staff members. From this perspective, the document is authored by SWRL organizationally. Each of more than 500 SWRL staff members--past and present--has made a direct and personal contribution to the development of the Kindergarten Program, the major vehicle of the inquiry. In addition, the SWRL Board of Directors and Advisory Council provided the governance necessary for the development. Pupils, teachers, and school administrators throughout the Nation have individually contributed source data and personal reactions. Ginn and Company staff have been responsible for publishing, marketing, and distributing the program. The U. S. Department of Health, Education and Welfare, through the National Institute of Education and the Office of Education, provided the financial sponsorship of the programmatic R&D, and various individuals within the Federal Government buffered the bureaucracy at critical points.

The products of large-scale, long-term programmatic R&D speak for themselves. Conventions for acceptably crediting the individual contributions to such products have still to be worked out. Just as the methodology applicable to research does not suffice for the technology of development, so the conventions surrounding a research report do not provide adequate guidance for development documentation. Although the R&D reported is SWRL-general, the contributions to the inquiry are individual-specific and can be credited as such.

THE EFFECTS OF PROGRAMMATIC R&D ON SCHOOLING AND THE EFFECTS OF SCHOOLING ON STUDENTS: LESSONS FROM THE FIRST-YEAR INSTALLATION OF THE SWRL/GINN KINDERGARTEN PROGRAM

Ralph A. Hanson and Richard E. Schutz

INTRODUCTION

For the past decade the Nation's schools have been placed in a most awkward situation by the R&D community in education. The conclusion derived in the mid-1960's that research has identified no variables that reliably affect instruction (Stephens, 1967) has been extended to support assertions that schools have no effect on the instruction of students. Although the logic has obvious flaws, the proposition that schooling is impotent in the face of imputed personal or familial "deficiencies" in combination with social and economic "disadvantages" has come to be an accepted popular conclusion by the education profession as well as by the public. The implications of this position have been a delight to many social scientists but a despair to most other segments of society. To the schools, the R&D which is ostensibly being conducted on their behalf has come to mean ridicule and disparagement rather than research and development. Researchers in education have expressed surprise that school authorities are not now a "constituency" for educational research. The wonder is that they permit it at all, given the injury it has yielded under the guise of proffered help.

Some pious researchists will regard the foregoing as heretical. The researchism dogma goes as follows. If "research shows" that schools are "worthless," the scientific ethic demands that this "truth" be recognized. If the "truth" hurts, those that are hurt are charlatans anyway and can be dismissed as such. What is needed is greater "knowledge," which only research can provide and which society for that reason has an obligation to support. When the knowledge is discovered, society will be in position to do "better." Until then, since whatever society does in education "has no effect" anyway, the least costly economic route is the best route for education. This logic has proved costly to education and educational research in recent years.

The purpose of this document is not to fuel debate or compound division surrounding education and educational research but to provide an empirically supported alternative to the current despair over education occasioned by educational R&D.

Antecedents

A comprehensive review of the issues and experiences that preceded and surround the present inquiry would require discourse so voluminous

as to distract rather than illuminate the exposition. We shall deliberately set aside in this document all relevant history except the bare sequence of events that provided the reason-for-being of the report. Other parts of the history are reported in detail in other SWRL documents.

Let us take up the account in the mid-1960's with the establishment of Regional Educational Laboratories, formed through the initiative of the federal government and the cooperative effort of public and private interests. What the new institutions were to do was clear. USOE Commissioner of Education, Francis Keppel described the intention in testimony to the Congress in 1965:

The proposed system of large-scale Regional Educational Laboratories would provide the funds and the setting for the conduct of research, for the articulation of the results of research into forms that can be used in classrooms, for continuous testing of these forms, for the training of teachers in their use, and for making them available to local school systems.

How they were to do it was an open question. RELs did many things and SWRL did many things as an REL. But neither the history of the Regional Educational Laboratories nor of SWRL is germane to the present account, except to credit the point that without those histories there would not be the account.

One of the outcomes of the programmatic research and development conducted by SWRL was what came to be known as the SWRL/Ginn Kindergarten Program (KP). KP was an outcome of an R&D program commitment pledged by SWRL in 1965 to provide resources to enable schools to reliably teach youngsters to read, beginning in kindergarten, irrespective of the pupil's previous cultural and educational experience and excepting only those individuals with identified physical organic disability. The R&D stemming from this organizational commitment has yielded several instructional products currently in use in schools. KP itself includes two instructional programs: the Instructional Concepts Program (ICP) and the Beginning Reading Program (BRP), and four support programs. In addition to KP, other products, each with several subprograms, that resulted directly from this particular development effort include the SWRL English Language and Concepts Program for Spanish-Speaking Children, the SWRL Learning Mastery Systems in Reading, the SWRL Reading Program, and the SWRL Advanced Reading Program.

The history of the programmatic R&D leading to these products is not germane to the present account, except to credit the point that without the programmatic R&D there would not be the products. It should also be noted that the collaboration of the school, academic, industrial, and governmental communities was required to bring the

products to a form generally available for the demonstrated improvement of school practice--the goal of programmatic R&D in education.

Developing promising educational products is one matter; financing their use is another. The financial considerations requisite to the rapid widespread installation by schools of developed educational products have been given continuous attention by SWRL throughout its history. The small sum of discretionary funds, both absolutely and relatively, that is available to school officials for non-labor instructional costs poses a serious obstacle to rapid large-scale installation. However, the labor-intensive characteristic of school agencies provides a high-leverage potential for instructional product installation, if modest financial incentives can be allocated for product-referenced financial support without competing with labor costs.

The opportunity to test and demonstrate the effects of product-referenced financial support in education arose through a complex sequence of actions stimulated by the leadership of then-Secretary of the Department of Health, Education and Welfare, Elliot L. Richardson. These actions, which began in Fall, 1970, were not publicized or made fully known to SWRL until Spring 1972 in connection with a study by HEW General Counsel of the legality of action that had been taken by SWRL and USOE. The study found no fault with the actions of either party, but the findings need no elaboration here except to credit the point that political, economic, commercial, and legal interest are today confounded and may not be ignored in any educational R&D effort of any significance.

The following quotation is from the HEW General Counsel "Statement of Facts:"

On November 4, 1970, Secretary Richardson sent a memorandum subject Performance Priorities, to the Under Secretary, Assistant Secretaries, and others, including the Commissioner of Education, asking the Assistant Secretary for Planning and Evaluation to assemble a quick rough shake-down of the system aimed at breaking loose the clearest and most applicable lessons to be derived from a decade of R&D. In response, on November 21, 1970, the AS/PE sent the Secretary in an action memorandum, a list of 11 projects from throughout the Department under the title Promoting new ideas that work. Included in the list and attached project descriptions was the Communication Skills Program (Reading), another name for the SWRL Kindergarten Program. The descriptive attachment recited that "The Laboratory will be ready to release the program to publishers in 1971...", and then provided the following "Additional Strategies to Expand Implementation":

1. Additional funds could be allocated to expand its 1971-72 installation tryout to include more school districts throughout the United States, especially in the South.
2. The laboratory could use funds from OEO and OCD and work with these agencies to launch a major installation of its Kindergarten Reading Program in Day Care Centers.
3. Some of OE's teacher training funds could be used to run in-service training in the SWRI approach.
4. OE regional personnel and personnel in State education agencies could be trained in this system and could work to train principals and teachers.
5. The Commissioner could give priority, with his ESEA Title III funds, to projects designed to spread this system.

The following recommendation was then approved by the Secretary (signature line - "Yes - ELR"):

If it is determined that this system can be expanded over the next three years to reach half of the relevant school population . . . then the Commissioner should be asked to develop a plan to reach at least that portion of the relevant population by the fall of 1973.

The recommendation approved by Secretary Richardson was ambitious. It was the only one of the goals for the five "ideas resulting from the education R&D 'shakedown'" that was realized within the time-frame approved by Secretary Richardson. The other ideas did not come close. KP not only achieved the Secretary's goal, but it also contributed to the expansion of the Kindergarten market for the publishing industry in general.

In January 1971, SWRI prepared a statement for USOE consideration, "Proposed Fiscal Formula for Stimulating Installation of Verified Instructional Products." Within a three year period, the formula would make available to a district incentives in the maximum total amount of 20% of the materials costs for 100% of the pupils in the

district so that by the end of the third year the product could be in use with 100% of the pupils in the district and would be 100% locally self-sustaining.

Through the leadership of Dr. Terrel H. Bell, then the USOE Deputy Commissioner of Education for School Systems, \$1.3 million was allocated under ESEA Title III (306) to provide incentives within 18 states for the 1972-73 school year. The detailed provisions of Title III prevented implementation of the incentive formula exactly as proposed, but the approximation was close. The number of states and the amount of money were both arbitrary, amounting to what was "left" in September, 1971 when the Commissioner of Education announced the planned use of the remainder of available 1972-73 funds to Chief State School Officers. Other aspects of the history of the installation incentive support formula are not germane to the present account, except to credit the point that "breaking loose the most applicable lessons to be derived from a decade of R&D" in HEW could not have been accomplished for KP without the support of Secretary Richardson, Commissioner Bell, and other concerned officials within HEW.

The installation relationships were straightforward in operation but large in scale. The incentive grants for the installation of KP were from USOE to local education agencies, with state education agencies involved consistent with standard ESEA Title III arrangements. School districts used standard local practices in deciding whether or not they wished to install KP, with or without the federal incentive. School districts obtained KP materials directly from the publisher, Ginn and Company, consistent with standard district purchasing practices. USOE informed participating districts that cooperation with SWRL in a Quality Assurance information inquiry would satisfy the grant evaluation requirement. Any district could opt to do its own evaluation, and some did. SWRL interacted directly with local education agencies in the Quality Assurance inquiry, keeping state education agencies and USOE officials regularly informed of the progress. The financial support for the Quality Assurance inquiry was through the SWRL R&D program, which was sponsored before 1972 by USOE and has since been sponsored by the National Institute of Education. Ginn and Company provided computer support to SWRL for the inquiry at no cost. The history of the administrative aspects of the installation are not pertinent here except to credit that the complex large-scale organizational interactions were successfully handled, with the unsung heroes who overcame the obstructionist self-serving segments of the several bureaucracies best left anonymous but gratefully and respectfully acknowledged.

Scope and Nature of the Inquiry

The arrangements under which KP was used in 1972-73 provided the first opportunity to test the claim that important instructional outcomes may be reliably attained in a variety of school settings with a wide

variety of students through use of a systematically developed educational product. Previous inquiries have lacked key elements or data required for such a test. For example, the Coleman Report and National Assessment studies have included elements of the data for such a test but have lacked referents for, or even knowledge of, the instruction. The science and mathematics curriculum study projects of the 1960's have included elements of the instructional product for such a test but have lacked data referenced to student outcomes and to specific features of the instruction. The Follow Through Planned Variations conducted concurrently with this inquiry will augment the present findings. But the analogous results of that study have yet to be published.

From an "experimental design" perspective, the present inquiry had a number of positive features. The size of the sample provided sufficient replicability to permit consideration of statistical units at the state, district, school, and class, as well as the pupil level. Although none of these units was "randomly" assigned to "treatment," the abundant potential for cross-checking within the sample compensated in good part for this. The recommendation to "use the class as the unit" in instructional research has often been made, but has seldom been followed. The recommendation is sound, and it worked well in this inquiry.

Not only was there ample opportunity for numerous intra-sample comparisons on a cross-sectional basis, the fact that the "treatment" was repeated a second year (1973-74) provided the basis for longitudinal replication to further check and extend the inferences drawn from the first-year installation (1972-73) that is reported here.

Finally, a natural "control group" for comparison purposes became available when USOE in 1973-74 sponsored a Kindergarten Reading Readiness Study in the same states in which KP was being used. The data collection for this inquiry was coordinated to provide relevant information for three Reading Readiness Programs as well as for KP. The information generated is specific to each program, but it also provides a basis for comparative statements for the programs as a set that can be used to further test the inference network regarding KP.

A second kind of "control group" for the effects being studied was the sample of several thousand pupils receiving instruction in 1972-73 and 1973-74 with the SWRL English Language and Concepts Program for Spanish-Speaking Children. This aspect of the design permits multiprogram and multipopulation, as well as multiyear and multi-treatment comparative inferences.

This document treats only the 1972-73 data on KP. In this sense it represents a partial report of the grand design. The 1972-73 inquiry has, however, comprehensive integrity and sufficient internal controls to warrant reporting as such. Analyses of the data for other aspects of the grand design are in progress and will be reported upon completion.

It is clear for inquiries of this scale that the precedents of small-scale social scientific research, where the findings may be definitively communicated in a single report, prove altogether inapplicable.

The two-year KP inquiry was termed a "Quality Assurance (QA)" study to distinguish it from "evaluations," "interventions," "experiments," "demonstrations," "research," or "development." The methodology was straightforward, and the operations were minimally interruptive for participating schools. The measures involved in the inquiry paralleled the instruction that was conducted, and each measure had a motivation for teachers that was intrinsic to instruction. A "pretest" was administered to each child at the beginning of the year to assess school-relevant proficiency upon entering kindergarten. Then, for each program (ICP and BRP) teachers recorded the completion dates and proficiency scores of pupils during the instruction. At the end of instruction for ICP and at the end of the school year for BRP, "posttests" were administered.

This simple instrumentation yielded a massive data base--for each year over 2,000 schools, 100,000 pupils, and 100 "scores" for each pupil, obtained on over 20 occasions during the year. Statisticians will be quick to note that this sample is much larger than is "needed." This observation misses the point, however, that the "sample" was not set up for the inquiry. It was present adventitiously, independent of the study. Similarly for the instrumentation. Only a one-page six-item demographic data questionnaire was prepared especially for the QA study. All of the rest of the materials were "natural." The complete costs of the inquiry therefore were marginal and nominal. That the QA data are useful for scientific purposes is a benefit beyond the direct benefit to school operations and to the government. With further experience in programmatic R&D in education, it will be possible to reduce the costs of data analysis by reducing the sample size for data collection and analysis purposes, but this is a trivial economy.

The benefits of the inquiry were thus direct, immediate, and specific. For the schools, the activity provided instructional management information concerning the installation of KP, with the information analyzed and arrayed differentially in separate reports to each participating class, school, district, and state to forward the instructional planning efforts of teachers, principals, and district administrators. For the government, the activity provided an efficient and effective means of satisfying the evaluation requirements imposed when public funds are legislatively or administratively mandated for a categorical educational purpose. For SWRL, the activity provided an opportunity to extend operationally the technology of Quality Assurance in the context of instruction. For the educational R&D community, the activity provided a rich data base that can be mined extensively in the future.

It is of interest that with these large-scale samples, the logic conventionally associated with statistical hypothesis testing in educational research holds applicable, while many conventional analytic operations become superfluous. With samples of this size, virtually any differences among pupils, classes, or schools are "statistically significant." This permits many interpretations of practical significance by "inspection" which in a small sample study would require further statistical manipulation for interpretation.

The analysis presented in this report does not purport to exhaust the possibilities for statistical analysis of the data base. The present analysis is largely descriptive in nature and univariate or bivariate in focus. More elaborate multivariate techniques proved unnecessary for the conjectures that were being tested, and we avoided exercising them for their own sake. Analyses probing other aspects of the data base are in progress at SWRL, and the data are archived in a form to permit their general use by researchers nationally. All data were collected to maintain the strict privacy and anonymity of teachers and pupils and were coded in processing to protect the confidentiality of schools and districts.

MATERIALS AND OPERATIONS

This section provides brief background on the materials used in the KP Quality Assurance inquiry and on data collection operations followed in 1972-73.

The Kindergarten Program

The SWRL/Ginn Kindergarten Program is a research-based program developed for use by schools to help kindergarten children learn conceptual skills fundamental to academic achievement and to master beginning reading skills. It consists of four subsystems:

1. Instructional systems include the Instructional Concepts Program and the Beginning Reading Program.
2. Instructional support systems include the Tutorial, Parent-Assisted Learning, and Summer Reading Programs.
3. School personnel training systems developed for each of the instructional systems and for the Tutorial Program permit districts to install the Program without outside personnel assistance.
4. The assessment materials and procedures of the Quality Assurance system provide a means crediting the attainment of instructional outcomes and communicating the status of instructional pacing.

The Instructional Concepts Program (ICP)

Concepts taught pertain to colors, sizes, shapes, amounts, positions, and comparisons. Successful participation in the program equips a child with 96 concept terms. Instructional materials and procedures are presented in seven units, each requiring between one and three weeks to complete. At the end of each unit, a 12-item Unit Criterion Exercise is provided to assess pupil learning.

The Beginning Reading Program (BRP)

Beginning reading skills are taught in a program designed to be pleasant and successful. By the end of the kindergarten year, children completing the program learn to:

1. Read the 100 words taught directly in the program.
2. Sound out and read new words composed of word elements taught in the program.
3. Demonstrate comprehension of the material they read.

Instructional materials and procedures are presented in ten units, each typically requiring between one to three weeks to complete. After the completion of instruction on each unit, a 20-item Unit Criterion Exercise is provided to assess pupil learning of letter names, word elements, words, and word attack.

Source Data Components

The following components were completed by participating classes and schools:

1. Entry Survey - The Entry Survey is a set of 22 items to be administered to pupils prior to or at the start of kindergarten. These items cover specific semantic concepts such as use of "before" and "after" and verbal skills such as recognizing letter names and simple words. Three sample items are shown below:

ILLUSTRATION



QUESTION

Point to the large cake.



Point to the shoe after you
point to the car.

h

What is the name of this letter?

The items are included in a booklet for administration by teachers. The teacher indicates the pupil's response to each item on the Entry Survey Pupil Response Sheet.

- ICP Unit Report - This Report is used to provide a record of the scores and completion dates of the seven ICP Unit Criterion Exercises. The information is recorded on the Report by the teacher as each unit is completed. Part of a completed report is illustrated below:

ICP UNIT REPORT

PUPIL		UNIT 1		UNIT 2		UNIT 3		UNIT 4		UNIT 5		UNIT 6		UNIT 7								
		SCORE	DATE		SCORE	DATE		SCORE	DATE		SCORE	DATE		SCORE	DATE							
			M	DAY		M	DAY		M	DAY		M	DAY		M	DAY	M	DAY				
Alpha, A	1	10	10	2	9	10	16	12	10	31	6	11	9	8	11	26	11	12	12	12	1	7
Beta, B	2	6	10	10	5	10	31	7	11	14	3	11	30	4	12	14	8	1	7	7	1	21
Gamma, H	3	12	10	3	10	10	17	11	11	1	9	11	12	10	11	27	11	12	10	11	1	7
Delta, D	4	9	10	10	10	10	31	11	11	14	11	11	30	9	12	14	10	1	7	10	1	21
Epsilon, E	5	8	10	3	9	10	16	8	11	1	7	11	30	6	12	14	8	1	11	7	1	25
	6																					

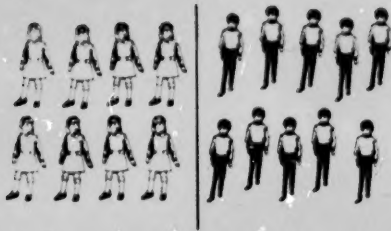
- ICP Assessment - The ICP Assessment is a set of 30 individually administered items sampling the seven ICP units. Each item requires that the pupil respond by either pointing to an appropriate object or making a verbal response. Three sample items are shown below.

ILLUSTRATION

QUESTION



Point to the shovel with less sand.



Point to the side (of the page)
with 8 children.



Point to the smaller white object.

The items are included in a booklet for administration by teachers. The pupils' responses to each item are recorded on the ICP Pupil Response Sheet as the assessment is administered.

4. BRP Unit Report - The BRP Unit Report provides a record of the unit scores and completion date for each pupil on the ten BRP units. Each BRP Unit Criterion Exercise includes a total of 20 items with five items referenced to each of the four major program outcomes (words, word elements, word attack, letter names). Each of these four outcome scores and the completion date is recorded by the teacher as the units are completed. An illustration of a completed portion of this Report is given below:

BRP UNIT REPORT

PUPIL	UNIT 1								UNIT 2								UNIT 3							
	OUTCOME				T I M E	DATE		OUTCOME				T I M E	DATE		OUTCOME				T I M E	DATE				
	1	2	3	4		W	D	1	2	3	4		W	D	1	2	3	4		W	D			
																						Y	M	Y
Alpha, A	1	2	4	5	5	7	9	25	4	1	4	3	7	10	9	5	5	5	4	7	10	23		
Beta, B	2	3	5	4	4		9	27	1	2	5	5		10	18	4	4	5	3		11	1		
Gamma, H	3	1	2	2	1	8	9	26	2	3	2	2	8	10	24	3	3	2	2	8	11	14		
Delta, D	4	5	4	4	5		9	25	4	4	5	4		10	10	5	5	5	4		10	31		
Epsilon, E	5	3	2	3	4	P	9	25	3	4	4	3	P	10	16	3	2	4	4	P	10	30		
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	9																							
	10																							

5. BRP Assessment - This assessment consists of a set of 43 items which sample from each of four program outcome areas. These items are administered by teachers to all pupils at the end of the school year. The first three parts of the assessment (words, word elements, and letter names) are designed to be group administered while the fourth part (sentence reading) is individually administered. After administration, the teacher totals the number of items answered correctly in each outcome-section and records this information on the BRP Assessment Record. Shown below is an illustrative item from each outcome section.

Assessment Section	Sample Item	Number of Items	
Words	Mark the word them	18	
the	Sam	them	this
☐	☐	☐	☐
Word Elements	Mark the letter or letters for the sound ell	9	
ill	et	it	ell
☐	☐	☐	☐
Letter Names	Mark the letter c	6	
s	e	o	c
☐	☐	☐	☐
Sentences	Read the Sentence.	10	
Mit is in his bed.			

6. School Information Sheet - In addition to the five classroom records, the district coordinator completed a one-page School Information Sheet for each participating school in the inquiry. This Information Sheet reports basic demographic information for the school.

Data Collection Operations

Each participating district designated a QA coordinator who was the operational contact between SWRL and all other school personnel. The basic data collection operations are outlined in the following sequence:

1. The superintendent in each district receiving an incentive grant was given information about the QA inquiry, invited to participate, and if agreeable, asked to designate a QA coordinator for the district.
2. Subsequently, the QA coordinator received all information and materials for the district, including the initial QA materials needed for classroom use.
3. The QA coordinator was responsible for explaining QA operations to teachers and for disbursing the necessary QA materials to schools.
4. During KP use, the coordinator received completed records from teachers, noted their receipt, and forwarded records to SWRL for further processing.
5. SWRL maintained contact with district coordinators throughout the year, providing information about the progress of data collection through periodic Status Reports, answering questions about QA, and providing additional materials and procedures (both scheduled and unscheduled) as needed.
6. At the end of the year, each coordinator was provided with class, school, and district summary reports based on the data collected. These reports were forwarded to the district superintendent for appropriate distribution. Summary reports were also prepared summarizing the data at the state and total sample levels.

Figure 1 provides the schedule of SWRL-District contacts during the 1972-73 QA operation.

Schedule of SWRL/District Contacts

<u>MAILING</u>	<u>MATERIALS</u>	<u>RECIPIENT</u>
Aug. 11, 1972	Letter, QA Coordinators Guide & Checklist, Postcard (for indicating number of classes)	Coordinator
Aug. 25, 1972	Letter, Sample Entry Survey Classroom Packet, extra copies of Entry Survey Pupil Response Sheets, large Return envelopes	Coordinator
	Entry Survey Booklet, Entry Survey Pupil Response Sheet, QA Teachers Guide	Teacher
Sept. 25, 1972	Letter, ICP Unit Report (sample copy), BRP Unit Report (sample copy), QA Coordinators Guide & Checklist (extra copies)	Coordinator
	ICP Unit Report, BRP Unit Report	Teacher
Nov. 8, 1972	Letter, Sample ICP Assessment Packet, large Return envelopes	Coordinator
	ICP Assessment Instruction Sheet, ICP Assessment Booklet, ICP Assessment Pupil Response Sheet	Teacher
Jan. 23, 1973	Letter, School Information Sheets (one per school), Postcard (for indicating disposition)	Coordinator
Feb. 16, 1973	Letter, QA Status Report (two copies), Return envelope	Coordinator
*Apr. 1, 1973	Letter	Coordinator
Apr. 17, 1973	Letter, QA Status Report (two copies), Return envelope, Sample BRP Assessment Packet, extra Pupil Assessment Booklets	Coordinator
	BRP Assessment Guide, BRP Sentence Card and Score Sheet, BRP Scoring Sheet, BRP Scoring Key, BRP Assessment Booklets (30)	Teacher
July 20 - Aug. 10,	Final letter, QA District, School and Class Reports, Final Report Guide	Coordinator

* Only to districts not submitting data.

Figure 1. Schedule of SWRL/District contacts.

Processing the data involved the coordination of three related activities: initial coding and related clerical tasks; translation of data into computer input (keypunching or scanning); and computer checking, storage, correction; analysis; and reporting. A flow chart of the overall process is shown in Figure 2.

User Reports

The QA operating system provided two kinds of reports to users. Status Reports issued during the year (Figure 3) were designed to verify the assignment of class numbers within each district and to provide the coordinator with a summary of the QA materials received from the district to date. The first Status Reports were sent to coordinators on February 15 after the Entry Survey, ICP Unit Report, and ICP Assessment had been scheduled for completion by the districts. The second Status Reports were sent on April 25 after all classroom records (except the BRI Unit Report and Assessment Report) were to be completed.

QA Summary Reports utilized formats designed to efficiently describe the KP experience. The data were converted into information that would be understandable and useful for the various categories of personnel involved. Since the data were amenable to a large number of possible presentations, the following guidelines were formulated.

First, a special report should be provided for each level of district personnel participating in the QA inquiry. That is, reports should be designed summarizing experience at the class, school, district, and state levels. Second, information at one administrative level should be reported in no greater detail in reports designed for personnel at more generic levels. For example, information about class experience was provided in the greatest detail at the classroom level; summaries for use at the school and district level did not detail existing information at any finer level and did not include additional class data. Third, no information should be provided to personnel beyond their direct area of use and control. For example, at the school level only information about a given school was presented; information related to other schools was not included. By thus limiting the range of reporting, the possibilities for inappropriate comparisons were minimized. A final guideline specified that a manual for interpreting all data presented in a report should accompany each report, thus minimizing the possibilities of misinterpreting the results.

Based on these guidelines, report formats were developed that appeared to present the results in the most straightforward manner, at the least cost, and in the most conveniently interpretable form. An illustration of the report formats are shown in Figures 4, 5 and 6. These reports along with Interpretive Guides to accompany each level, i.e., class, school and district, were distributed to each district in the Fall of 1973.

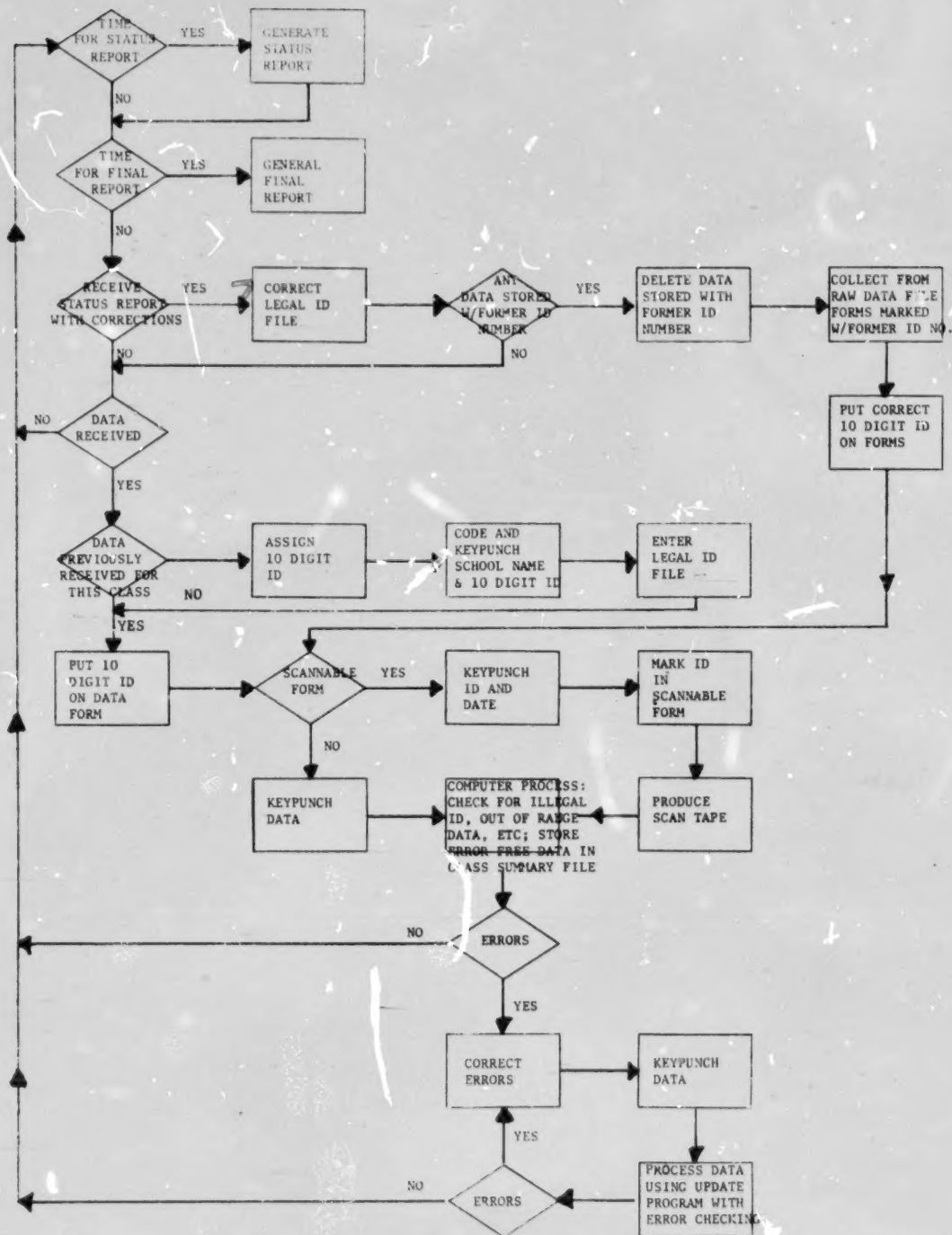


Figure 2. Flowchart of QA data processing.

(328)

APRIL 10, 1973

Figure 3. QA Status Report.

		ENTRY SURVEY (30 PUPILS REPORTING)																							
SCORE	NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	MEAN
OF PUPILS		0	0	0	0	0	0	0	1	2	0	1	7	1	7	3	4	6	2	1	1	0	0	0	13.24
NUMBER OF PUPILS																								UNIT 7	
CLASS COMPLETION DATE																								JA 2	
DURATION IN WEEKS																								3	

STATE OHIO
DISTRICT JONESVILLE
SCHOOL L.P. MORGAN

1972-73

KINDERGARTEN PROGRAM INSTALLATION
QUALITY ASSURANCE DATA
SCHOOL REPORT

1501024

CLASS 6A									
ENTRY SURVEY MEASURE									
UNIT	1	2	3	4	5	6	7	8	9
0-4	5-10	11-16	17-22	23-28	29-34	35-40	41-46	47-52	53-58
NUMBER OF PUPILS	0	2	2	2	2	2	2	2	2
MEAN SCORE	14.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6
DATE COMPLETED	11-16	11-16	11-16	11-16	11-16	11-16	11-16	11-16	11-16
DURATION IN WEEKS	2	2	2	2	2	2	2	2	2

BRP UNIT PACING AND PROFICIENCY									
UNIT	1	2	3	4	5	6	7	8	9
0-4	5-10	11-16	17-22	23-28	29-34	35-40	41-46	47-52	53-58
NUMBER OF PUPILS	0	2	2	2	2	2	2	2	2
MEAN SCORE	15.9	18.7	18.0	17.0	16.9	17.4	17.1	16.6	17.4
DATE	DE12	JAN1	FEB1	FEB1	FEB1	MAR1	MAR1	APR1	APR1
DURATION	4	3	2	2	2	2	2	2	2

CLASS 6B									
ENTRY SURVEY MEASURE									
UNIT	1	2	3	4	5	6	7	8	9
0-4	5-10	11-16	17-22	23-28	29-34	35-40	41-46	47-52	53-58
NUMBER OF PUPILS	0	2	2	2	2	2	2	2	2
MEAN SCORE	13.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
DATE COMPLETED	11-16	11-16	11-16	11-16	11-16	11-16	11-16	11-16	11-16
DURATION IN WEEKS	2	2	2	2	2	2	2	2	2

BRP UNIT PACING AND PROFICIENCY									
UNIT	1	2	3	4	5	6	7	8	9
0-4	5-10	11-16	17-22	23-28	29-34	35-40	41-46	47-52	53-58
NUMBER OF PUPILS	0	2	2	2	2	2	2	2	2
MEAN SCORE	17.2	18.2	16.8	16.7	17.4	18.8	17.9	17.6	18.0
DATE	DE11	JAN1	JAN1	FEB1	FEB1	MAR1	MAR1	APR1	APR1
DURATION	4	3	2	2	2	2	2	2	2

SUMMARY OF ALL CLASSES									
ENTRY SURVEY MEASURE									
UNIT	1	2	3	4	5	6	7	8	9
0-4	5-10	11-16	17-22	23-28	29-34	35-40	41-46	47-52	53-58
NUMBER OF PUPILS	0	2	2	2	2	2	2	2	2
MEAN SCORE	14.2	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
DATE COMPLETED	11-16	11-16	11-16	11-16	11-16	11-16	11-16	11-16	11-16
DURATION IN WEEKS	2	2	2	2	2	2	2	2	2

BRP UNIT PACING AND PROFICIENCY									
UNIT	1	2	3	4	5	6	7	8	9
0-4	5-10	11-16	17-22	23-28	29-34	35-40	41-46	47-52	53-58
NUMBER OF PUPILS	0	2	2	2	2	2	2	2	2
MEAN SCORE	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
DATE	DE11	JAN1	JAN1	FEB1	FEB1	MAR1	MAR1	APR1	APR1
DURATION	4	3	2	2	2	2	2	2	2

Figure 5. QA School Summary Report.

PARTICIPANTS

Table 1 presents the number of states, districts, schools, classes and pupils participating in each of the instructional programs (ICP, BRP, or Both). For the ICP and BRP, the number returning one or more of the QA records for that program is given.

Table 1

Number of QA Participants

Program Configuration	States	Districts	Schools	Classes	Pupils
ICP	18	343	2,049	4,503	115,554
BRP	18	329	1,967	4,193	111,114
Both	18	317	1,859	3,945	107,278

Biosocial Characteristics of QA Participants

The School Information Sheet provided descriptive information on participants. The results are summarized and illustrated in Table 2. Participants were asked to provide information on five items beginning with the characterization of the typical family income within the school. Table 2 shows that the typical participating school has an average family income of between \$5,000 and \$8,000. Forty one percent of the participating schools were reported in this category.

A second item of information concerned the ethnic composition of the school. Participants were asked to indicate the percentage of pupils for minorities included in the Equal Employment Opportunity Commission Reports. Table 2 presents this information by schools in which Black and Spanish-surnamed Americans equalled 50% or more of the enrollment.

The neighborhood location of the school was characterized in terms of the categories urban, suburban and rural. In addition, many districts wrote in the descriptor "inner city." Table 2 data show a very heavy concentration of the QA schools were from areas designated as either urban or inner city. In all, over half were designated as in the urban/inner city categories.

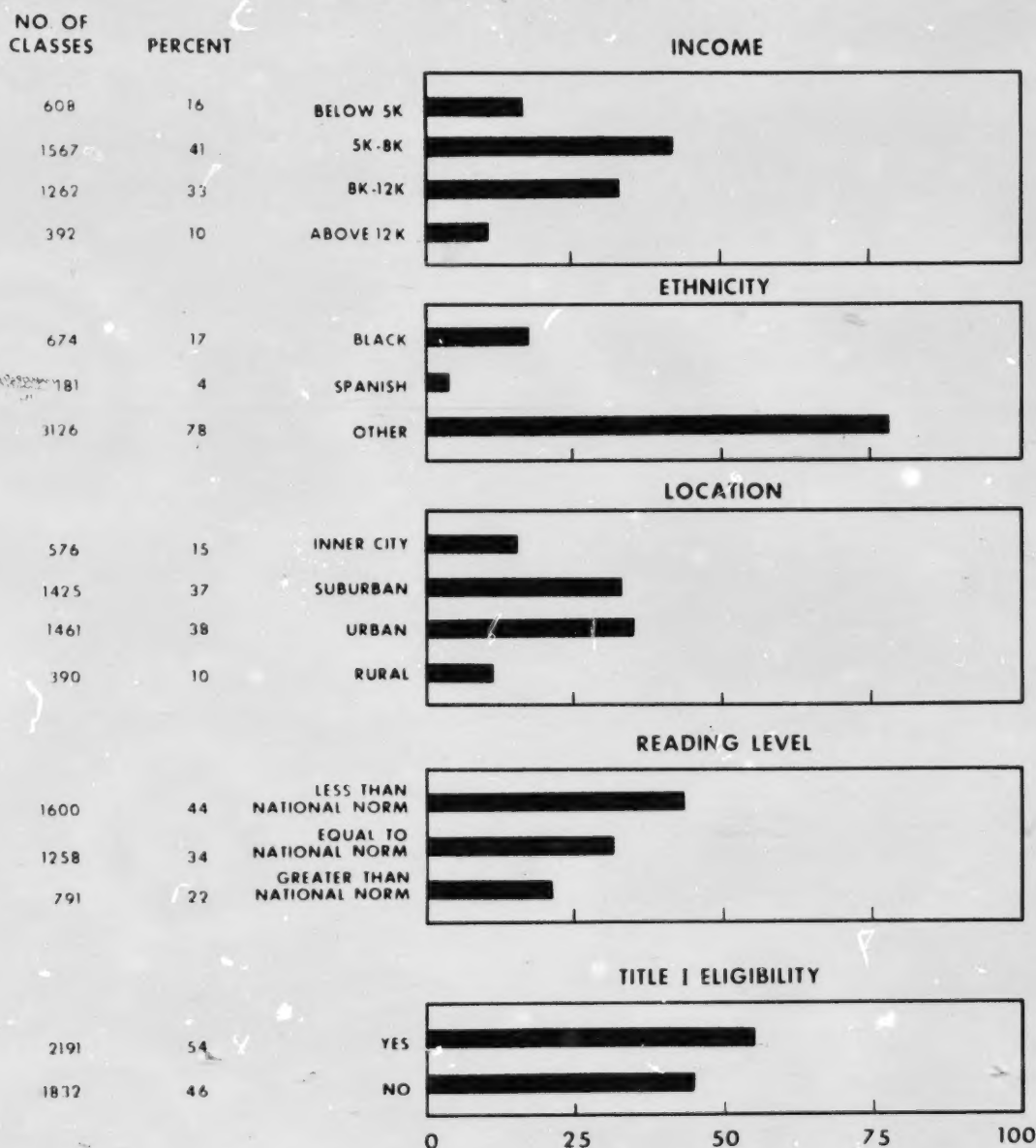
The next item of information requested an estimate of the level of reading performance of the particular school. As the tabulations in Table 2 indicate, almost half (44%) of the schools were reported

below national norms on their most recent standardized reading test, and only about one-fifth of the schools (22%) indicated performance exceeding the national norms.

One final characteristic requested was whether or not the school was eligible for ESEA Title I assistance. As Table 2 indicates, over 50% of the schools were eligible, indicating that the participants tend to reflect a high proportion of youngsters from families with poverty-level incomes.

Table 2

Biosocial Characteristics of QA Participants



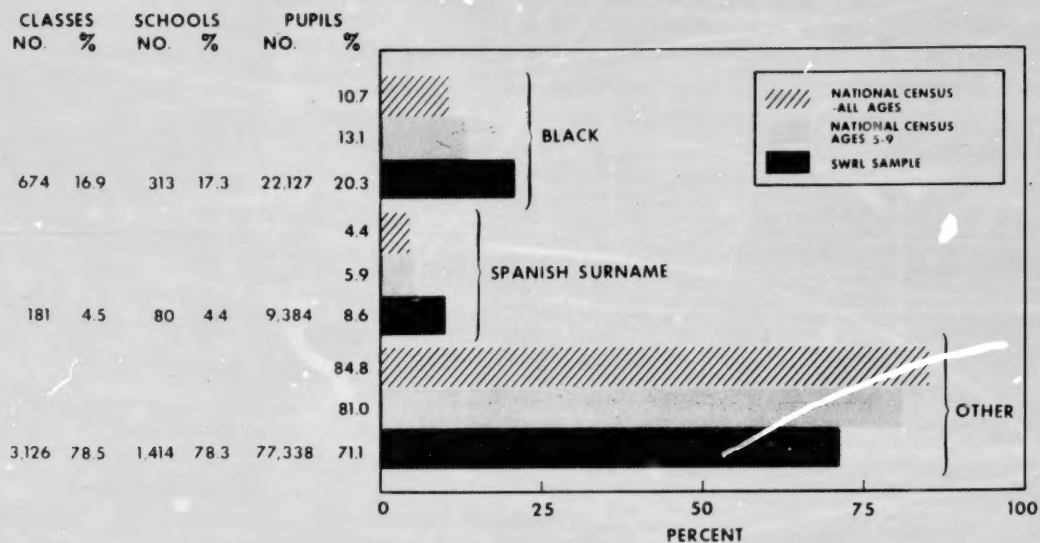
For each item of information, the schools display the demographic characteristics conventionally associated with low pupil achievement in school.

Ethnic Representation Compared to Census Data

The QA demographic information was obtained on all items except ethnicity at the school level, i.e., the average estimated value or the actual school designation for a category was obtained. As a result, comparisons with other sources such as census data could not easily be derived. However, for ethnicity this comparison could be made and the data are presented in Table 3.

Table 3

Comparison of QA Ethnic Representation to General Population



PROGRAM PROFICIENCY AND COMPLETION

The first level of data analyses to be reported examines the results for each of the QA indicator variables separately. In each case, these data are arrayed for the total sample of pupils, classes and schools and then by user biosocial characteristics at the class level.

Entry Proficiency

Pupil performance on the Entry Survey constitutes a baseline academic proficiency indicator prior to kindergarten instruction (Coker & Legum, 1975a, 1975b). Figure 7 shows the overall score distribution for pupils, classes and schools. It clearly displays the normal distribution at each aggregation level.

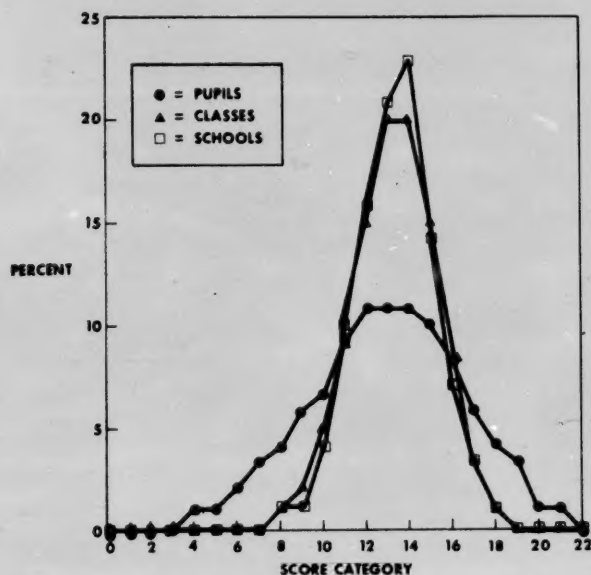
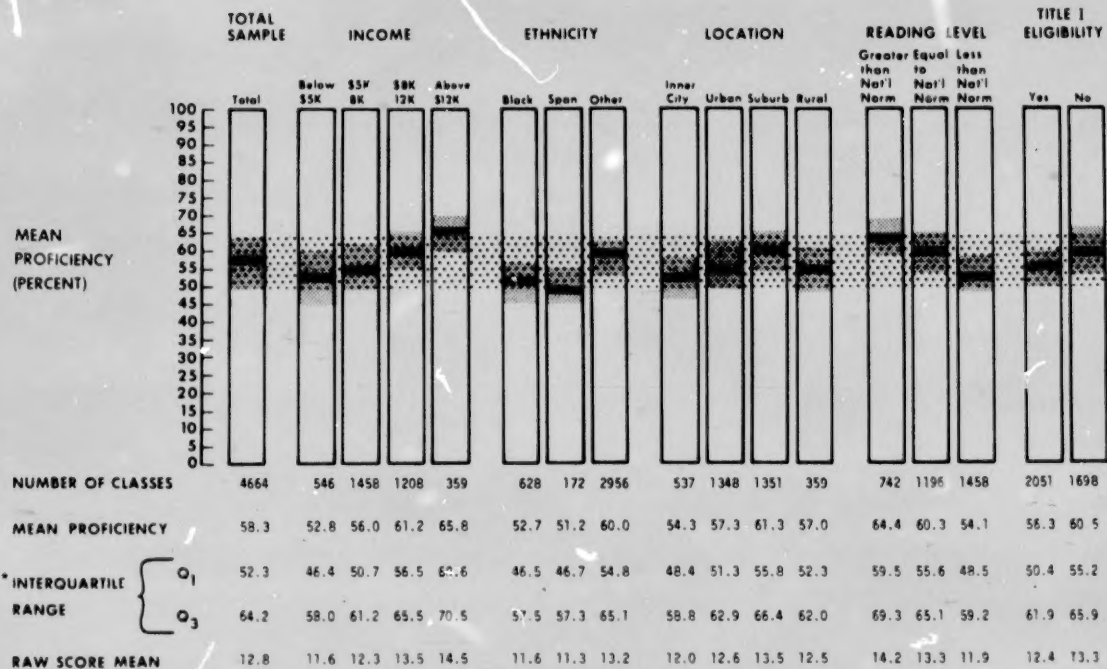


Figure 7. Entry Survey score distributions.

Table 4 provides a summary of performance on this indicator for all classes and for those classes within each of the descriptive characteristic categories. The average performance level of all classes is 58%, with individual class proficiencies distributed around this value. This is a typical psychometric pattern for academic pretests. Had the intent been to "standardize" the instrument, these data reflect ideal psychometric characteristics.

Table 4

Entry Survey Proficiency by Biosocial Characteristics



*The interquartile range includes the middle 50% of the total number of classes within a category.

The distributional pattern appears to hold consistently for classes across the descriptive categories. The average proficiency differences that occur within categories are consistent with expectations based on prior descriptive data on pupils from such categories. Slightly higher proficiency can be found in classes from higher income

levels that do not include ethnic minority groups, that are outside the urban or inner city areas, that are in schools with a history of reading performance at or above the average on norm-referenced measures, and not eligible for Title I funds. There is, however, considerable overlap in the distributions within each category.

Viewed from a proficiency perspective, the data indicate that the pupils in most classes possessed substantial entering skills prior to instruction. However, the proficiency level is low from the perspective of the basic rudimentary skills required for success in reading, mathematics, and the other primary academic subject matters addressed by schools. The classes typically were sufficiently capable to begin kindergarten instruction but had a "lot to learn" to accomplish the KP outcomes.

ICP Unit Proficiency

An illustration of the average ICP Unit criterion exercise score performance for all QA participants is given in Figure 8 in the form of score frequencies for pupils, classes and schools.

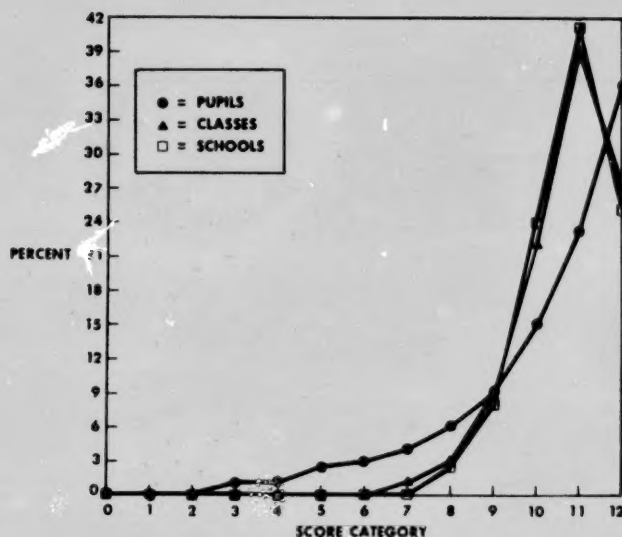


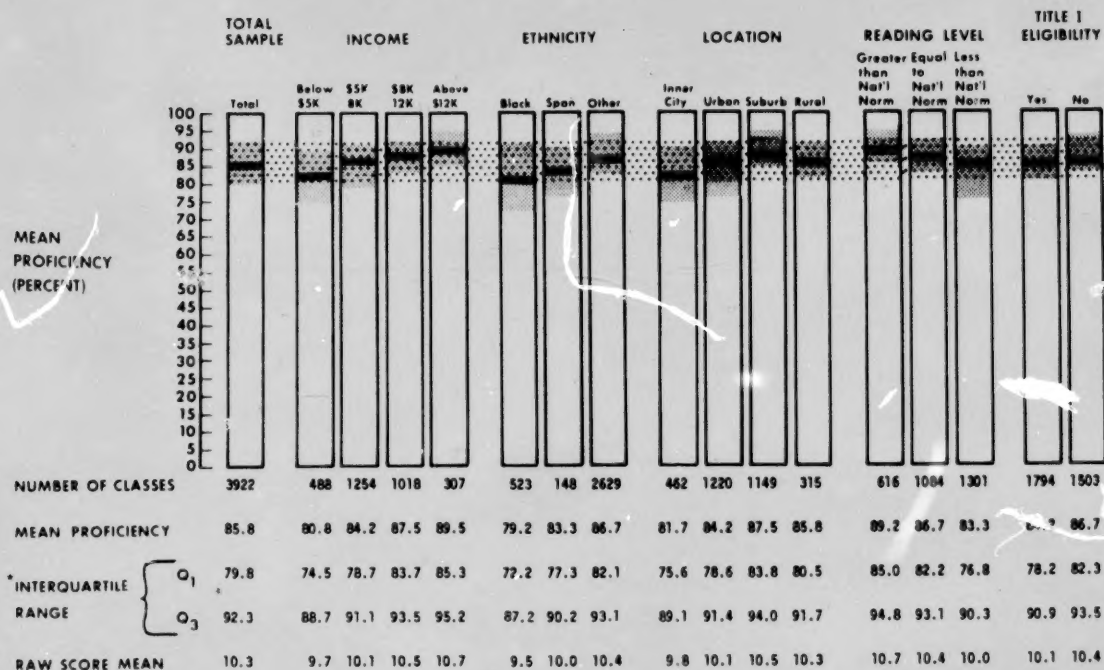
Figure 8. ICP Unit Criterion Exercise score distributions.

As this figure shows, all distributions are very negatively skewed. They indicate that the vast majority of the overall QA sample attained high proficiency scores on these measures.

A summary of ICP unit proficiency for each of the descriptive user categories is given in Table 5. These data show clearly the high level of proficiency across all categories of users. While there is some variability within categories, it is minimal when referenced to the average proficiency level. In every category, the average proficiency exceeded 80%. Overall, three fourths of the classes had average unit proficiencies that exceeded this value.

Table 5

ICP Unit Proficiency by Demographic Characteristics



*The interquartile range includes the middle 50% of the total number of classes within a category.

ICP Unit Completion

The pattern of ICP Unit Completion for pupils, classes and schools is illustrated in Figure 9.

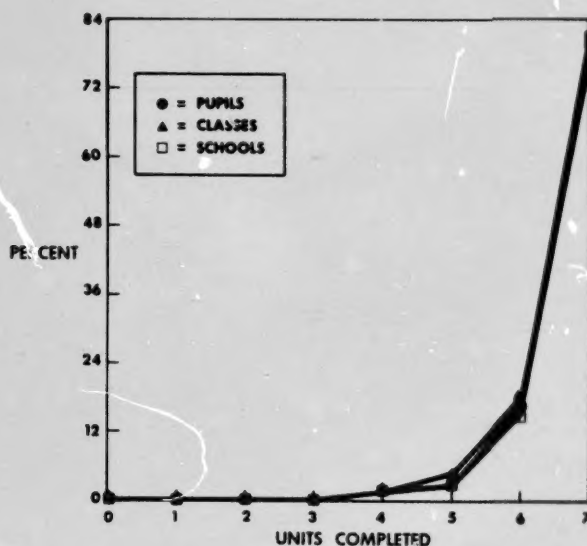


Figure 9. ICP Unit completion distributions.

The three lines are virtually colinear and indicate that over 80% of the users completed all seven units of the program. This high level of completion is expected since ICP typically requires less than 20 instructional weeks for a class to complete.

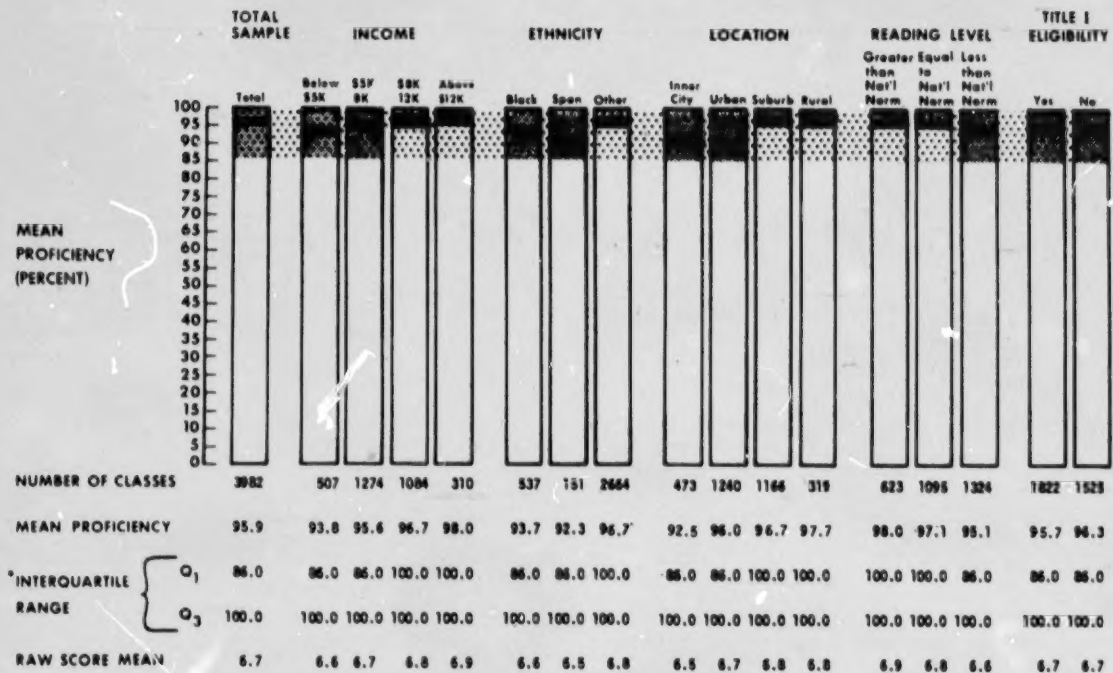
Summary data on unit completion for the user characteristic subgroups is given in Table 6. As these data indicate, little variability is found across user categories in ICP unit completion.

End-of-ICP Proficiency

Consistent with the high levels of unit performance and completion, the proficiency reflected on the measure administered following ICP instruction was extremely high. The frequency distribution given in

Table 6

ICP Unit Completion by Biosocial Characteristics



*The interquartile range includes the middle 50% of the total number of classes within a category.

Figure 10 shows that the high proficiency holds over pupils, classes and schools. Once again all the distributions are negatively skewed.

Such distributions and the high levels of pupil program proficiency they describe contrast markedly with the pattern of Entry Skills proficiency. Upon completion of instruction with ICP, attainment of the basic instructional concepts that underlie primary academic achievement in schools was clearly apparent at the pupil, class, and school levels.

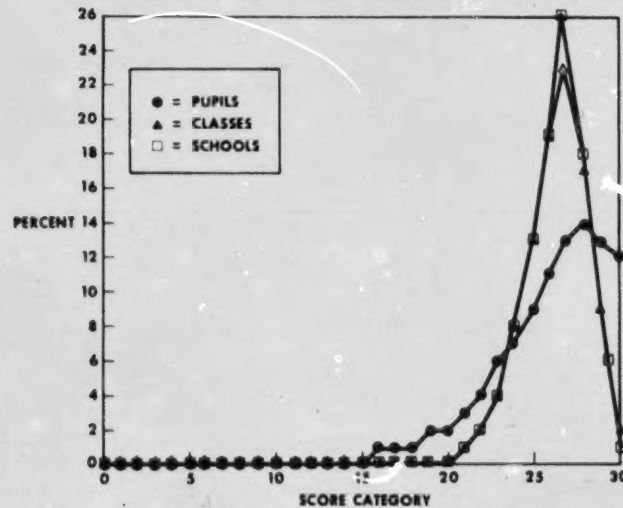
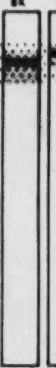
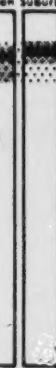
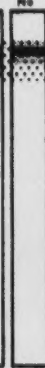
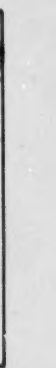


Figure 10. ICP assessment score distributions.

This same conclusion holds when the pattern of ICP assessment performance at the class level across the user characteristic groups is examined. Data on these groups are given in Table 7.

Table 7

ICP Assessment Proficiency by Biosocial Characteristics

	TOTAL SAMPLE	INCOME				ETHNICITY			LOCATION				READING LEVEL			TITLE I ELIGIBILITY		
	Total	Below \$5K	\$5K to \$8K	\$8K to \$12K	Above \$12K	Black	Span	Other	Inner City	Urban	Suburb	Rural	Greater than Nat'l Norm	Equal to Nat'l Norm	Less than Nat'l Norm	Yes	No	
MEAN PROFICIENCY (PERCENT)																		
NUMBER OF CLASSES	4191	514	1401	1117	330	564	162	2808	813	1249	1277	351	691	1130	1361	1920	1997	
MEAN PROFICIENCY	86.2	82.7	85.5	86.3	89.9	81.5	84.1	87.7	82.4	85.9	88.4	86.9	89.9	87.6	84.3	86.3	87.7	
INTERQUARTILE RANGE	Q ₁	82.2	77.7	81.6	85.1	87.3	76.6	79.8	84.3	77.6	81.8	85.1	83.8	87.1	84.3	80.1	81.2	84.2
		Q ₃	90.6	89.1	88.6	91.5	92.9	87.0	92.1	91.3	87.4	90.2	91.7	90.5	92.8	91.1	89.1	89.6
RAW SCORE MEAN	25.9	24.8	25.7	26.5	27.0	24.5	25.2	26.3	24.7	25.8	26.5	26.1	27.0	26.3	25.3	25.6	26.4	

*The interquartile range includes the middle 50% of the total number of classes within a category.

Consistently high levels of performance are apparent across these groups. Although there are mean differences and some shifts in the concentration of means (variability) across these groups, their magnitude relative to the limited area of the overall performance spectrum in which they occur makes them of negligible importance.

BRP Unit Proficiency

The average proficiency frequencies for pupils, classes and schools on the Unit Criterion Exercises for the ten BRP units is illustrated in Figure 11. These data show clearly that high proficiency was attained by the complete set of users across the three reporting levels. Once again the distributions are all negatively skewed with the highest score categories being the most frequently occurring.

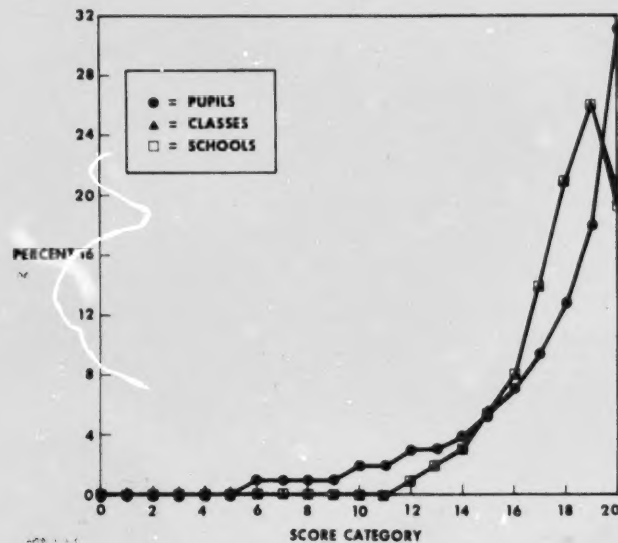
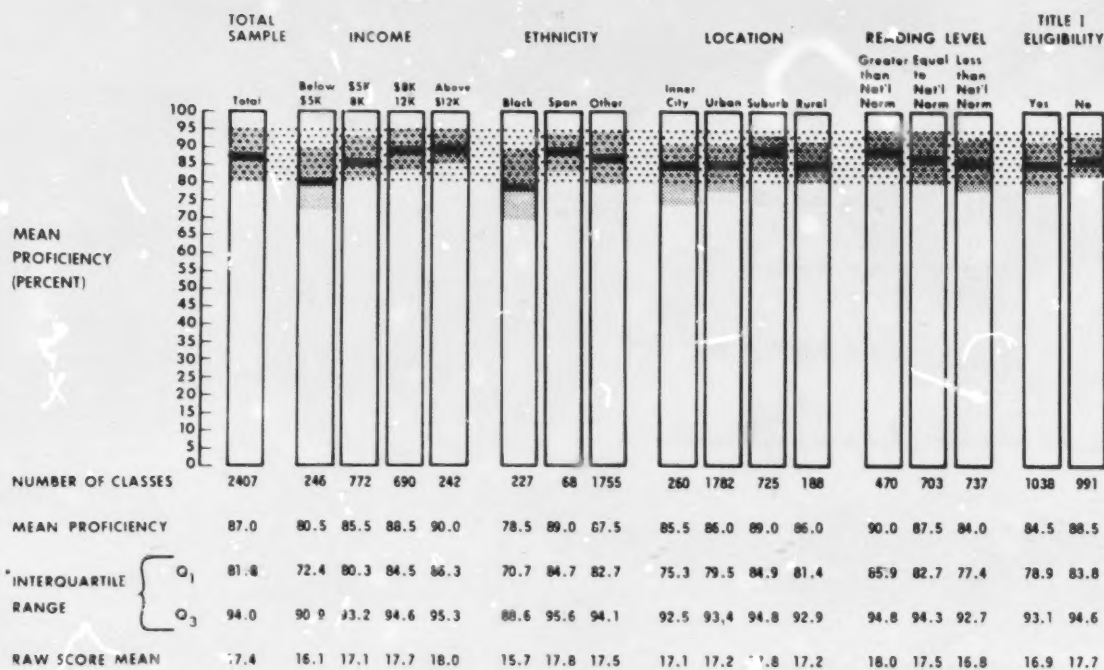


Figure 11. BRP Unit Criterion Exercise score distributions.

This pattern of high performance extends across the user categories as well. The data in Table 8 summarize the results for these groups. It shows that the average proficiency for all classes is 89%, ranging within categories from 81% to 93%. Once again, variability across categories is slight, relative to the overall level of proficiency attained.

Table 8

BRP Unit Proficiency by Biosocial Characteristics



*The interquartile range includes the middle 50% of the total number of classes within a category.

BRP Unit Completion

The frequencies of units completed by the total group of QA pupils, classes and schools are shown in Figure 12. These data display a new pattern with the shape of distribution functions for all levels being much less negatively skewed. The distribution is not too far from being rectangular, with about 10% of the users falling into each category between 2 and 9. At the extremes it deviates from that pattern with virtually no entries in the 0 and 1 unit categories and about 15% in the 10 unit category. These data suggest that all pupils,

classes, and schools finish at least 3 units and the two most frequent numbers of units completed is 9 and 10 with about 15% in each. However, the remaining 70% are distributed equally across the 3-8 units completed categories.

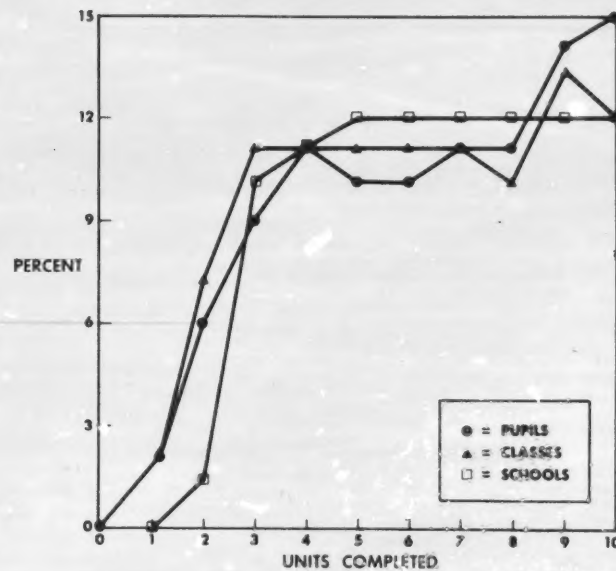
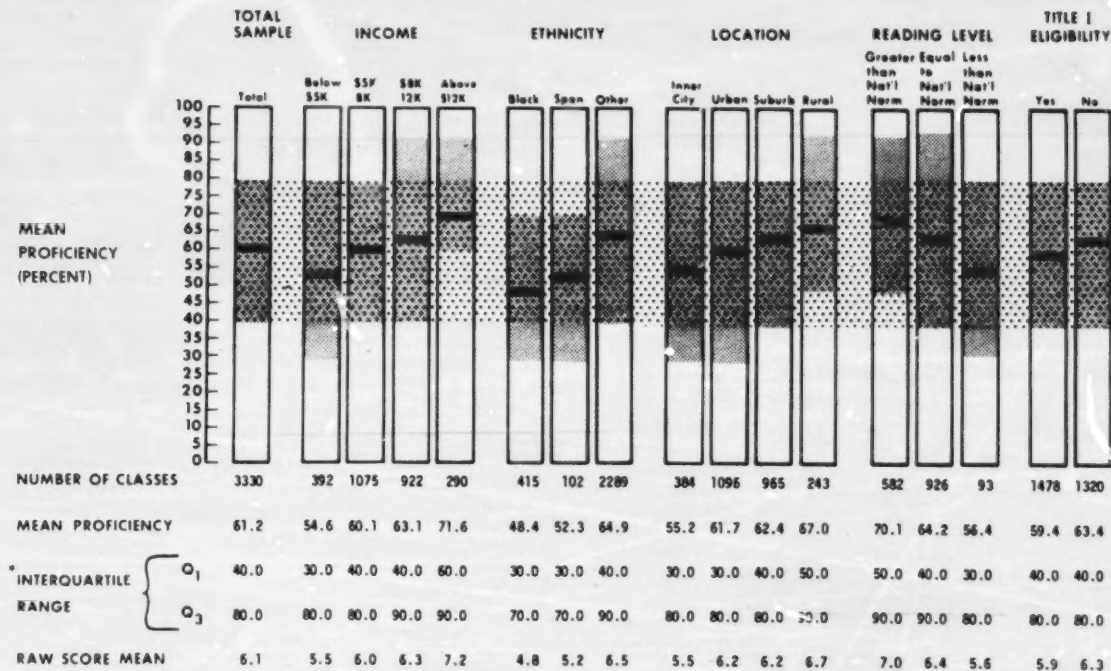


Figure 12. BRP Unit completion distributions.

The unit completion data are presented in Table 9. They indicate that the average class completed 6 of the 10 BRP units, with the upper quarter of the classes completing 8 or more units and the lower quarter completing 4 or fewer units. Further, there is considerable variability in unit completion across categories, ranging from the lowest average of 4.8 units in schools in which more than 50% of the pupils are Black to the highest average of over 7 units where the average family income is above \$12,000. This variability in unit completion is important since the overall outcome attainment of pupils should be directly related to the amount of BRP instruction received.

Table 9

BRP Unit Completion by Biosocial Characteristics

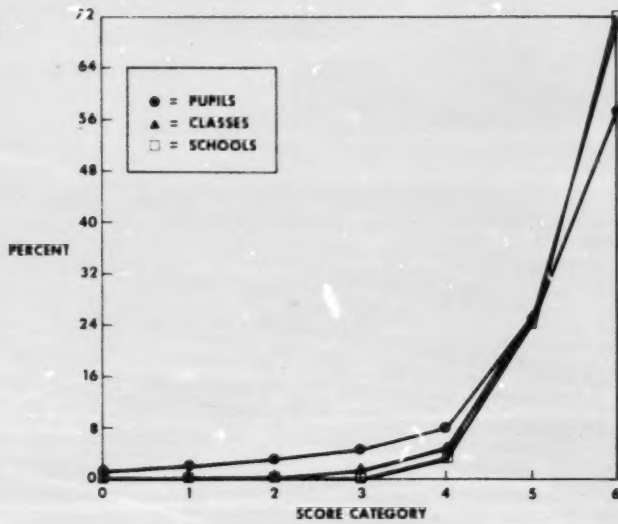


*The interquartile range includes the middle 50% of the total number of classes within a category.

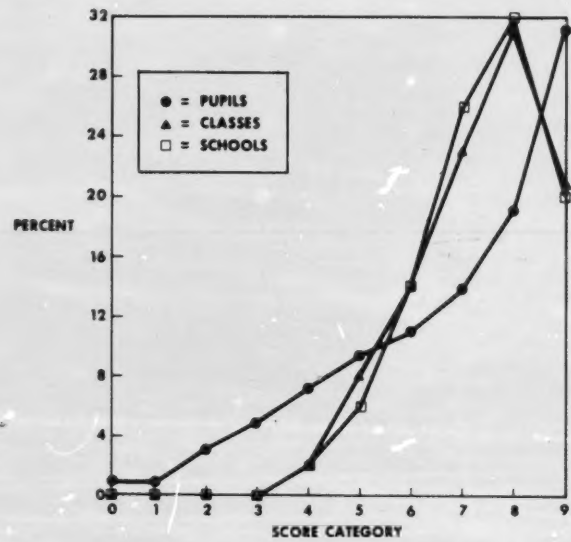
BRP End-of-Year Proficiency

The score distributions of pupils, classes and schools on the four BRP assessment outcomes are illustrated in Figure 13. These distributions are consistent across reported levels, i.e., pupils, classes, and schools, but vary considerably from outcome to outcome. The letter name and word element outcomes show negatively skewed distributions with the highest score categories being the most frequently occurring. The words and sentence outcome distributions are much less skewed with modal score categories occurring more toward the middle of the score range. Clearly, there was considerable variability between users in proficiency on the words and sentence reading outcomes and relatively little on letter names and word elements.

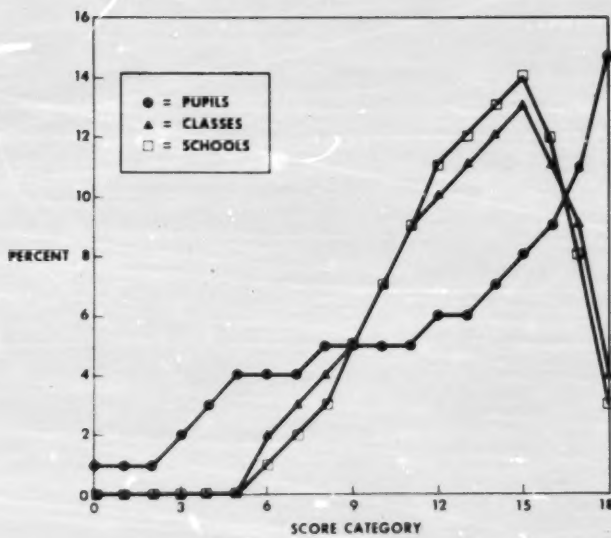
Letter Names



Word Elements



Words



Sentence Reading

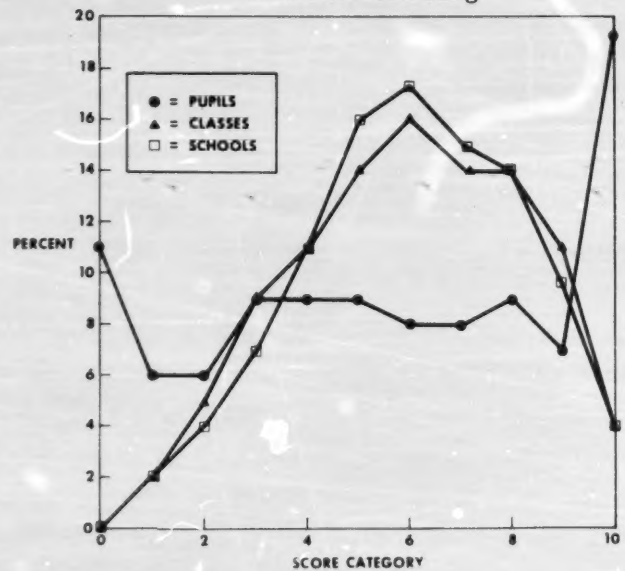


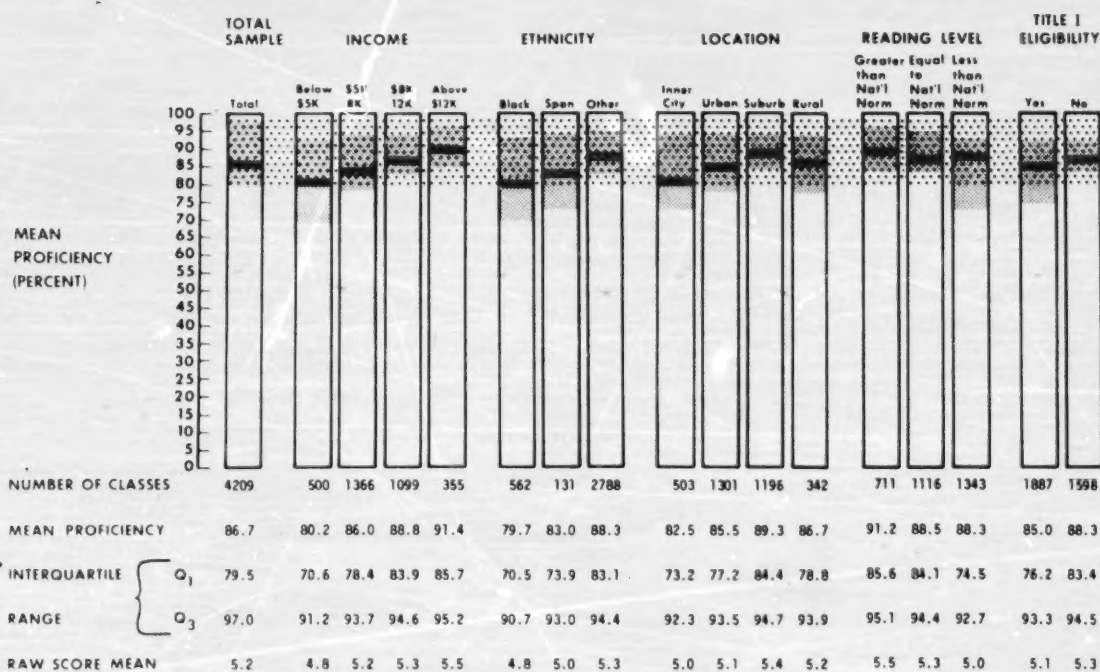
Figure 13. BRP assessment outcome score distributions.*

*Figure points based on a small number of classes (less than 6) have been omitted.

The average performance of classes on the four outcomes of the BRP end-of-year assessment are summarized and displayed in Tables 10-13. These results show that this variability in proficiency extends across both program outcomes and the user characteristic categories. The outcomes with the highest proficiency levels and least variability are Letters (Table 10) and Word Elements (Table 11). These two outcome areas received greater emphasis in the early BRP units than in later units and therefore might be expected to be less affected by differential completion of BRP units. The proficiencies on the two intraword outcomes are higher and display less variability than those for the Words (Table 12) and Sentence Reading (Table 13) outcomes. The specific lexical items included as words and as words-in-sentences increase in the later units of BRP, so that failure to complete later units might be expected to depress proficiencies and increase variability on the Words and Sentence Reading indicators.

Table 10

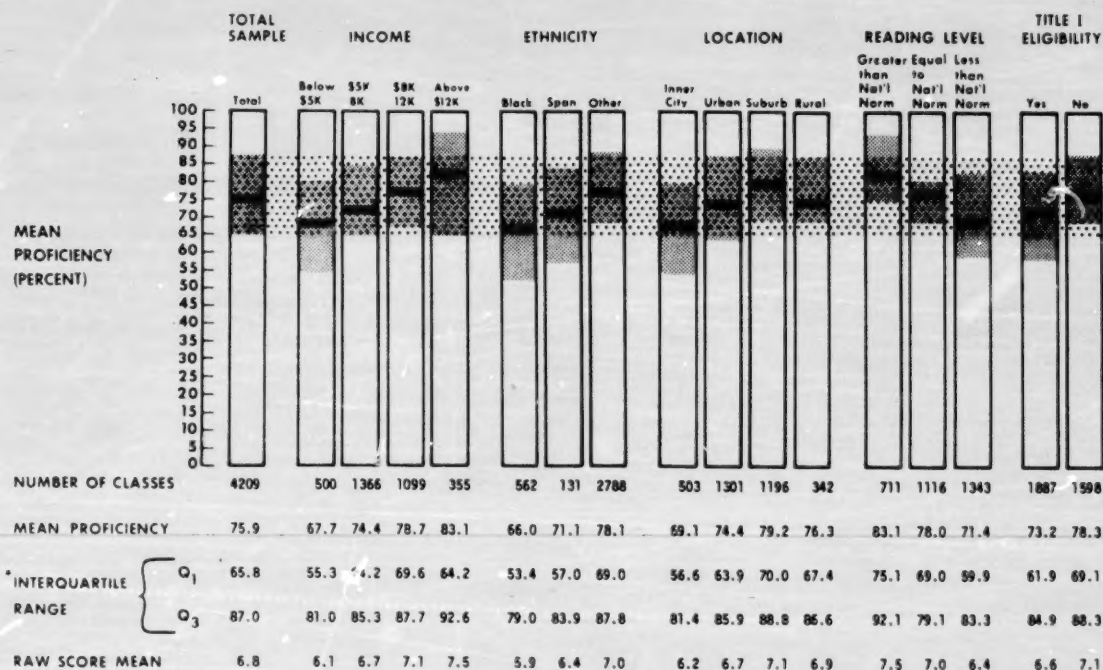
BRP Assessment Proficiency by Biosocial Characteristics: Letter Names



*The interquartile range includes the middle 50% of the total number of classes within a category.

Table 11

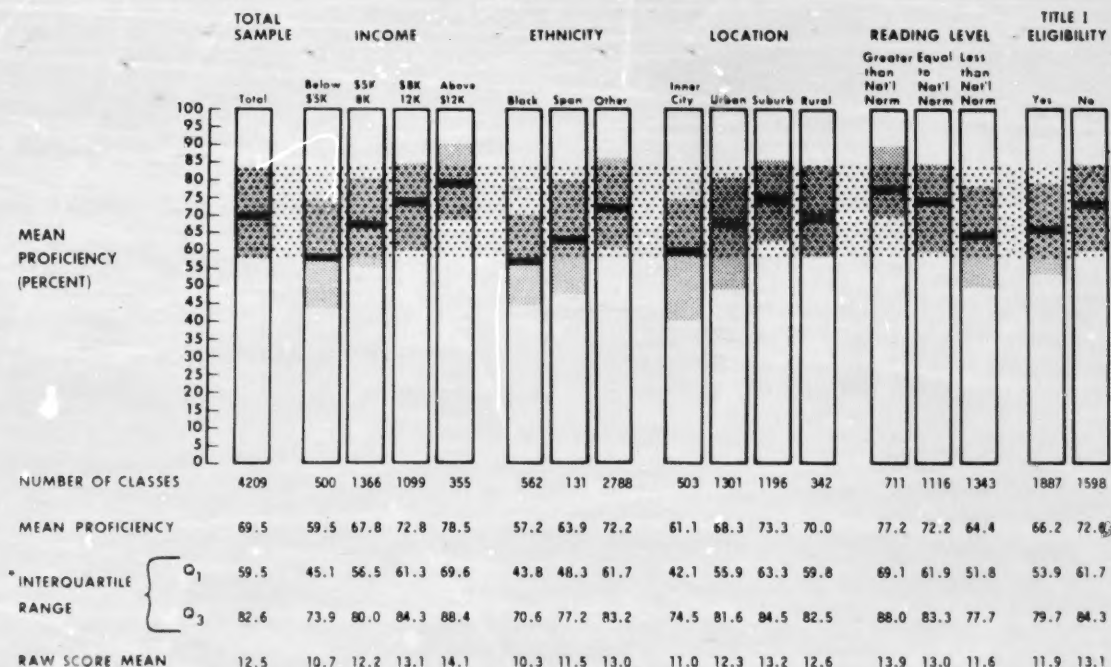
BRP Assessment Proficiency by Biosocial Characteristics: Word Elements



*The interquartile range includes the middle 50% of the total number of classes within a category.

Table 12

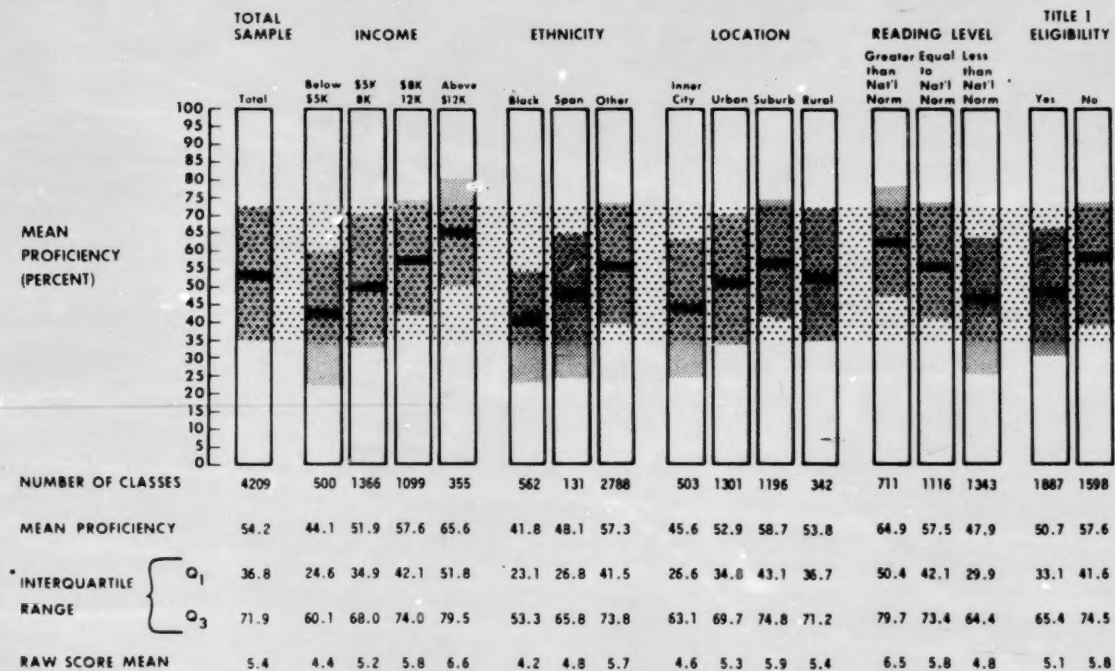
BRP Assessment Proficiency by Biosocial Characteristics: Words



*The interquartile range includes the middle 50% of the total number of classes within a category.

Table 13

BRP Assessment Proficiency by Biosocial Characteristics: Sentence Reading



*The interquartile range includes the middle 50% of the total number of classes within a category.

There are two possible explanations for the variability in BRP End-of-Year proficiency. The variability could be a function of differential instructional completion rates across descriptive categories. But the variability could also be a function of differential ability traits across categories. The choice among these two explanations has important educational, scientific, and societal implications. If schooling has an effect on pupils, the first explanation should hold. If schooling is impotent against biological and social characteristics of pupils, the second explanation should hold. Since educational R&D has heretofore been unable to produce any systematic evidence to support the schooling explanation, the odds overwhelmingly favor the biosocial explanation.

Summary of Program Proficiency and Completion Data

The data presented in Tables 1-13 help to describe the context in which KP was used during the 1972-73 academic year and the performance of the program in use. It is clear from these data that the KP users included all of the diverse pupil and school characteristics present in our Nation's kindergartens. Further, the proportion of the various population elements present in the sample tends to overrepresent user subgroups that traditionally have low educational achievement. This can be seen in the proportion of pupils from lower income levels, from ethnic minorities, from Title I eligible schools, and from schools with a poor record of performance on standardized reading tests, as compared to the proportions of these groups in the total school population nationally.

A second interesting matter of information is provided by the Entry Survey summary. These data show much variability in terms of entering skills of pupils relevant to academic success in school. The data also show large differences within and across biosocial characteristic divisions. The order of these differences corresponds identically to the differences observed and documented in numerous surveys and studies, e.g., Coleman et al. (1966). However, the numerical differences provided here reflect more precisely the actual distance between groups in the substance and skills addressed by KP.

The data summaries for ICP are important, first because they demonstrate clearly the pattern of unit proficiency, unit completion, and end-of-program proficiency ideally sought by instructional program developers and users. For each of these ICP performance indicators, the high average value attained by the total population as well as the users within each biosocial category completely overshadows any variability within or between categories. This pattern stands in marked contrast to the pattern of scores displayed by these classes on the Entry Survey before instruction with ICP. The pattern of Entry Survey data is representative of achievement measurement prior to instruction, while the ICP indicators display the patterns desired but seldom found in the past for pupils after completion of an instructional program of a practically significant scope and duration.

The results for the BRP indicators present a mixed set. Like the ICP data, the en route instructional indicators reflected in the unit criterion measures show that all users completing a unit attain high levels of proficiency. The second indicator of BRP instructional success, number of units completed, does not display comparable uniformity. Instead, considerable variability exists for classes in the number of BRP units completed. The data show substantial variability both across the various biosocial categories and also within each of the biosocial categories. This variability can be seen most clearly by examining the interquartile ranges associated with each category. For the total sample of classes, one quarter of the classes completed

eight or more units, one half completed between four and eight units, and one quarter completed less than four units.

As should occur when there is variability in the amount of instruction delivered, i.e., units completed, there is considerable variability in proficiency on the program outcomes. This was reflected on the BRP measures administered at the end of the year. For the Letter Name and Word Element outcomes, this variability is reduced by the fact that these outcomes receive heaviest instructional emphasis in the earlier program units. The pattern of the program proficiencies for these two outcomes (Letter Names and Word Elements) approaches that expected if all classes completed all units and instructional emphasis were equally distributed across all units. The results for the Words and Sentence Reading outcomes contrast markedly with this pattern. These two outcomes receive the heaviest instructional emphasis in the later BRP units. Further, the average attainment and variability differed across and within biosocial categories.

SCHOOLING EFFECTS AND BIOSOCIAL CHARACTERISTICS OF STUDENTS

The data on BRP thus fortuitously provide an opportunity to examine from a fresh perspective the age-old question of individual differences in learning of pupils. All pupils received the "same" instruction--BRP--during the year. At the end of the year, some had learned more than others. Those who learned less tended to be individuals from financially poor, inner-city, ethnic minority families. This aggregate category has become well known to the profession and to the public as the "educationally disadvantaged." The explanation of the variability in academic proficiency that follows from this perspective only strengthens the credibility of the problem without pointing toward any fresh solution. This is where previous inquiries have stopped, counseling general despair or radical revolution in the face of a massive problem which is above and beyond solution by schools.

But the data in the present inquiry permit further examination. The same instructional product, BRP, was used with all pupils. Suppose it were used differentially with pupils. If the instructional product is indeed effective, it would follow that the variability would be created by the instruction. The more effective the instructional product and the greater the differential use with categories of individuals, the greater the individual differences among pupils.

If this conjecture were to hold, it would lead to dramatically different implications regarding instruction than have been drawn from previous research. Rather than concluding that each child must receive unique instruction, it would follow that unique individuals

can benefit from instruction with a common product. Rather than concluding that full accountability for learning resides with pupils and teachers, it would follow that the instructional resources which are made available to pupils and teachers are highly influential in the success sought by accountability logic. Rather than concluding that only a "total reform" can raise schooling from its "miserable status," it would follow that logically and financially feasible means are available for strengthening education.

Other inferences will occur to the reader, who will also have concluded by now that the data do point to the plausibility of this second explanation. The strength of the plausibility is a matter the reader must decide. From a classical statistical perspective, the inquiry reported here could be considered an N-1 observation. However, the conjecture being tested is of such strength and scope that any evidence which systematically supports it would be worth serious attention.

Intercorrelations among Variables

Table 14 shows the relationships among various QA variables considered in this report. The correlational pattern is consistent and readily interpretable; substantively like variables have statistically like relationships. The correlational data confirm the information in foregoing tables concerning the entry skills, biosocial, and proficiency indicators.

The data regarding instructional days devoted to the programs, number of units completed, and class size are of particular interest. The correlations involving class size are uniformly low, indicating a near-zero relationship for this "size" variable with all of the other indicators in the matrix. The "time" variables, however, reflect different patterns for ICP and BRP. BRP end-of-year performance is strongly related to number of BRP units completed and also to the number of instructional days devoted to BRP. These are the best "predictors" of BRP end-of-year proficiency in the matrix. The number of ICP instructional days relates negatively to the BRP indicators, suggesting that few teachers used the ICP and BRP concurrently. The direction of the correlations of these time variables with the biosocial variables is provocative; although the magnitude of the correlations is low, the pattern is uniformly consistent.

Proficiency as a Function of BRP Units Completed

Let us consider whether the overall positive relationship between number of units completed and end-of-year proficiency holds throughout the units and for the various biosocial characteristics of users. As

Table 14

Correlations among QA Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
National Reading Norms	1																					
Eligibility for Title I	2	3763	3731	3731	3731	3731	3666	3890	3890	3890	3625	2587	3107	2725	3220	2725	3220	2984	2638	2638	2638	2638
Inner City Location	3	-276	3972	3972	3972	3972	3900	4023	4023	4023	3749	2655	3228	2798	3347	2798	3347	3108	2410	2710	2710	2710
Urban Location	4	-285	233	3993	3993	3993	3872	3993	3993	3993	3726	2639	3202	2782	3321	2782	3321	3083	2695	2695	2695	2695
Suburban Location	5	-091	-093	-312	3993	3993	3872	3993	3993	3993	3726	2639	3202	2782	3321	2782	3321	3083	2695	2695	2695	2695
Rural Location	6	313	-232	-306	-566	3993	3872	3993	3993	3993	3726	2639	3202	2782	3321	2782	3321	3083	2695	2695	2695	2695
Family Income Level	7	-016	245	-135	-250	-245	3872	3993	3993	3993	3726	2639	3292	2782	3321	2782	3321	3083	2695	2695	2695	2695
Percentage Black	8	-507	413	315	037	-355	169	3019	3919	3919	3655	2599	3139	2731	3254	2731	3254	3024	2642	2642	2642	2642
Percentage Spanish Surname	9	409	-211	339	-199	352	131	-353	4151	4153	3877	2754	3322	2900	3445	2900	3445	3196	2809	2809	2809	2809
Percentage Other	10	219	048	-159	100	006	045	-117	-131	4153	3877	2754	3322	2900	3445	2900	3445	3196	2809	2809	2809	2809
Entry Survey Mean Score	11	-041	165	407	126	-336	-133	381	-858	-374	3877	2754	3322	2900	3445	2900	3445	3196	2809	2809	2809	2809
Number of BRP Instruct. Days	12	-444	239	178	081	-267	039	371	-320	-215	390	2973	3635	3141	3779	3141	3779	3483	3010	3010	3010	3010
Number of ICP Instruct. Days	13	-123	077	074	-033	014	-067	108	-221	-080	243	179	2826	3148	2889	3148	2889	2677	3021	3021	3021	3021
Number of BRP Units Completed	14	122	-080	-109	-008	103	-044	-123	089	084	-127	-127	-189	2963	3828	2963	3828	3508	2846	2846	2846	2846
Number of ICP Units Completed	15	-184	077	094	-013	-030	-068	171	-237	-106	268	214	690	-276	3084	3330	3048	2822	3191	3191	3191	3191
BRP Unit Performance	16	-187	034	140	-008	-050	-063	108	-125	-092	165	101	065	-013	147	3048	3982	3643	2928	2928	2928	2928
ICP Unit Performance	17	-259	189	138	097	-211	-014	278	-385	089	305	390	123	-048	104	017	3048	2822	3191	3191	3191	3191
ICP Assessment	18	-358	199	227	108	-259	-017	332	-414	-070	411	514	175	-055	259	071	611	3643	2928	2928	2928	2928
BRP Assessment - Words	19	-351	194	269	055	-245	-041	310	-393	-077	408	530	213	-073	287	195	500	718	2727	2727	2727	2727
BRP Assessment - Word Elements	20	-297	193	182	050	-165	-045	295	-383	-038	365	401	497	-201	640	100	582	531	3195	3195	3195	3195
BRP Assessment - Letter Names	21	-287	178	171	063	-166	-040	282	-358	-021	334	390	439	-154	554	097	613	533	527	898	3195	3195
BRP Assessment - Sent. Read.	22	-250	165	148	079	-170	-019	265	-327	-024	312	378	322	-132	399	090	554	490	493	684	734	3195
		-283	162	154	015	-140	-030	261	-296	-042	288	370	507	-226	677	122	501	459	495	863	813	611

Correlations between the QA variables are given below the diagonal (with decimals omitted) and the number of classes above the diagonal.

shown in Figures 14 to 17 and Tables 15 to 18, the relationship is consistent. Proficiency regularly increases as a function of the number of units completed. Only minor differences, in some cases reasonably attributable to small n's, are found between user groups within an instructional outcome area. The major differences in the curves is between outcomes rather than between categories of program users, and the pattern for each outcome area matches the instructional architecture of BRP. That is, the slope of the curves is steeper for Words and Sentence Reading than for Word Elements and Letter Names.

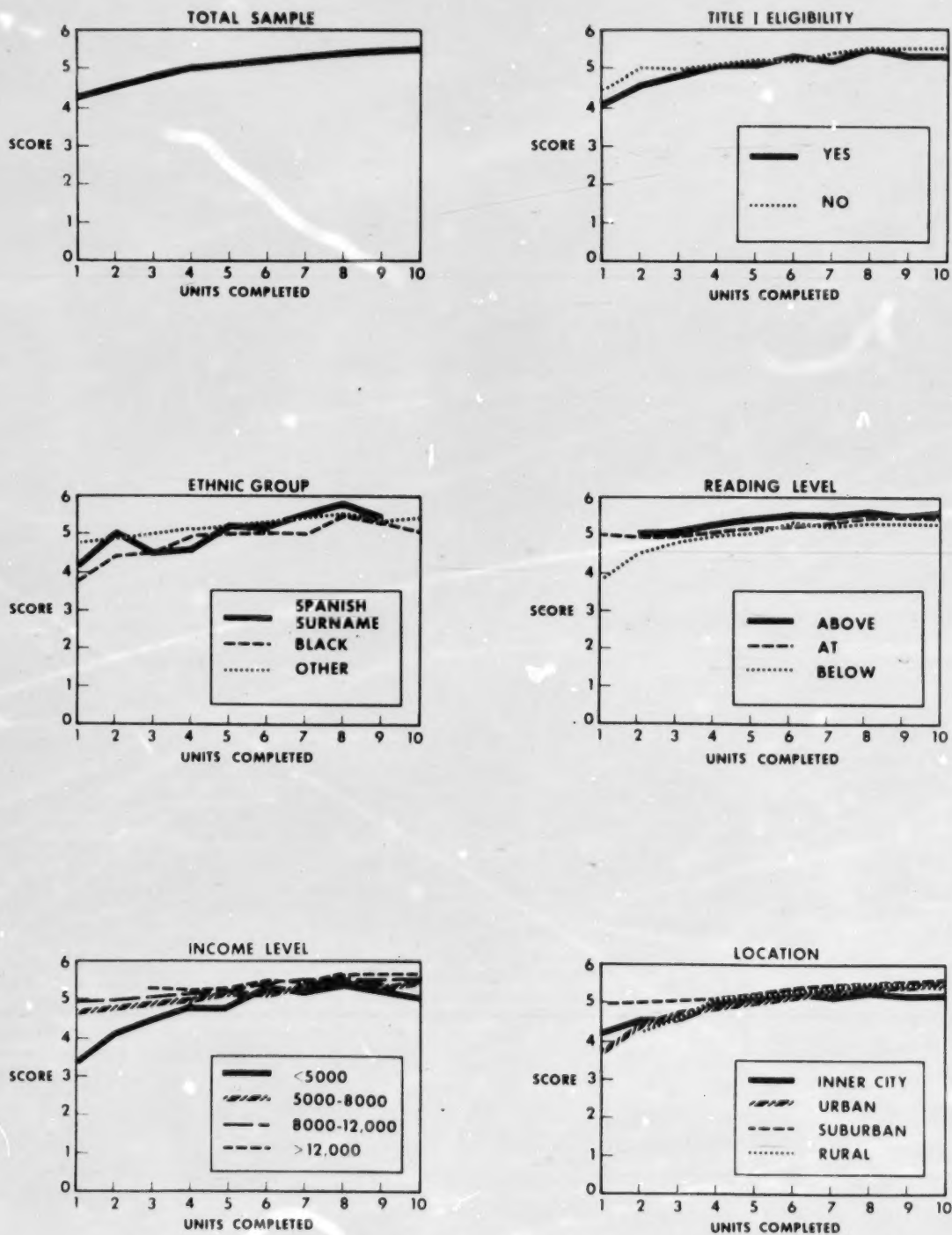


Figure 14: BRP assessment proficiency by units completed:
Letter Names.*

*Figure points based on a small number of classes (less than 6) have been omitted.

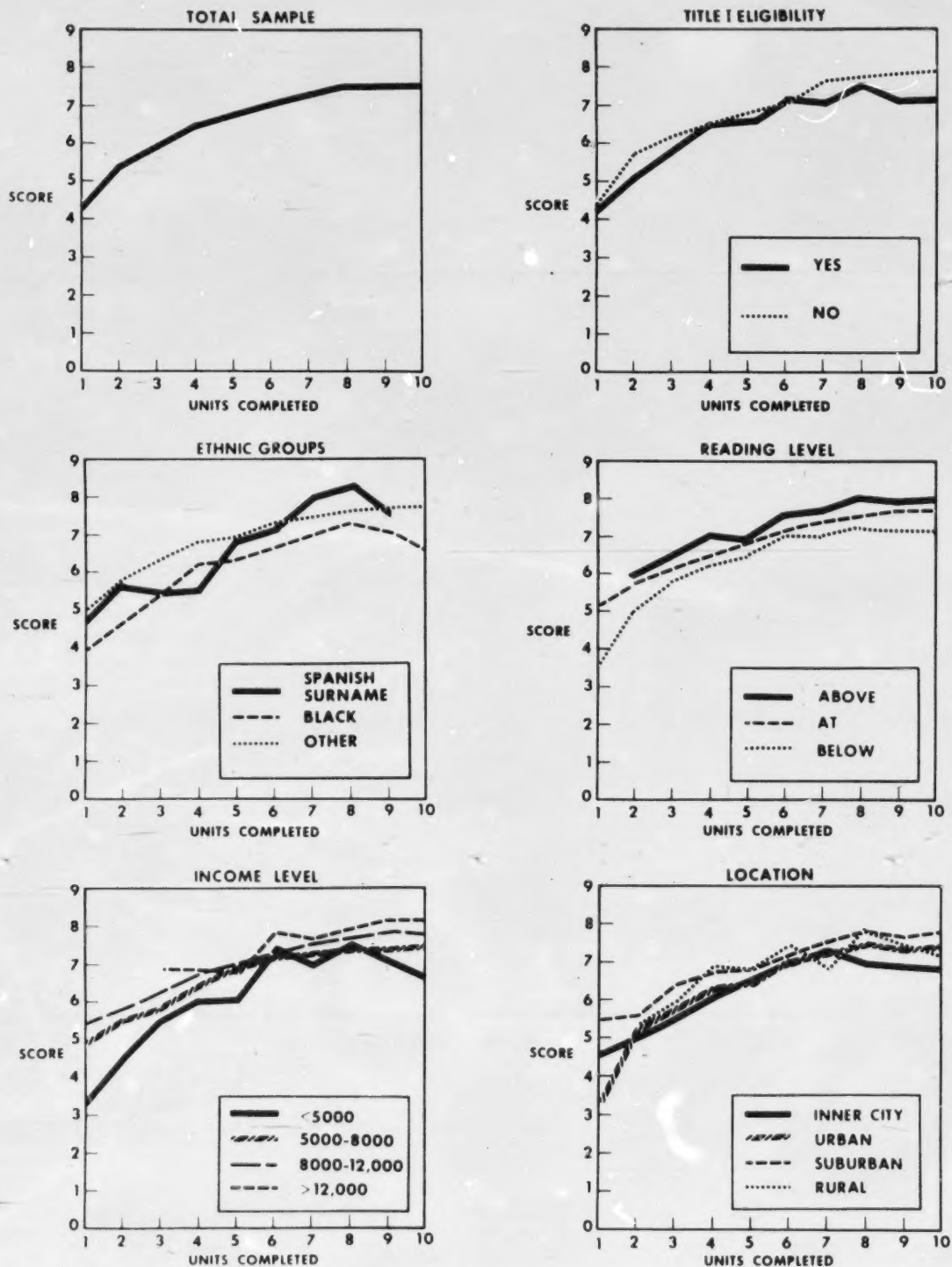


Figure 15: BRP assessment proficiency by units completed:
Word Elements.*

*Figure points based on a small number of classes (less than 6)
have been omitted.

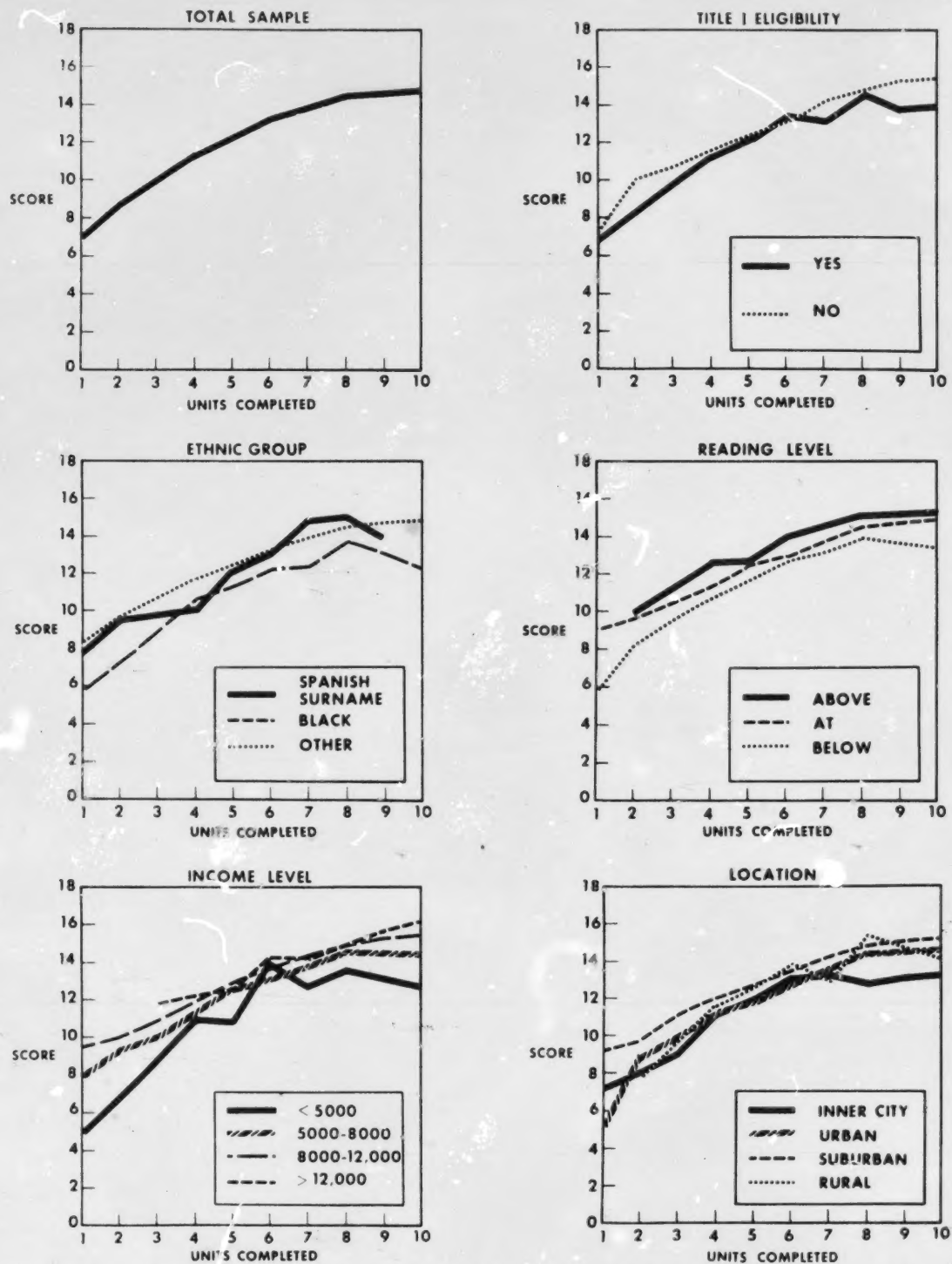


Figure 16: BRP assessment proficiency by units completed: Words.

*Figure points based on a small number of classes (less than 6) have been omitted.

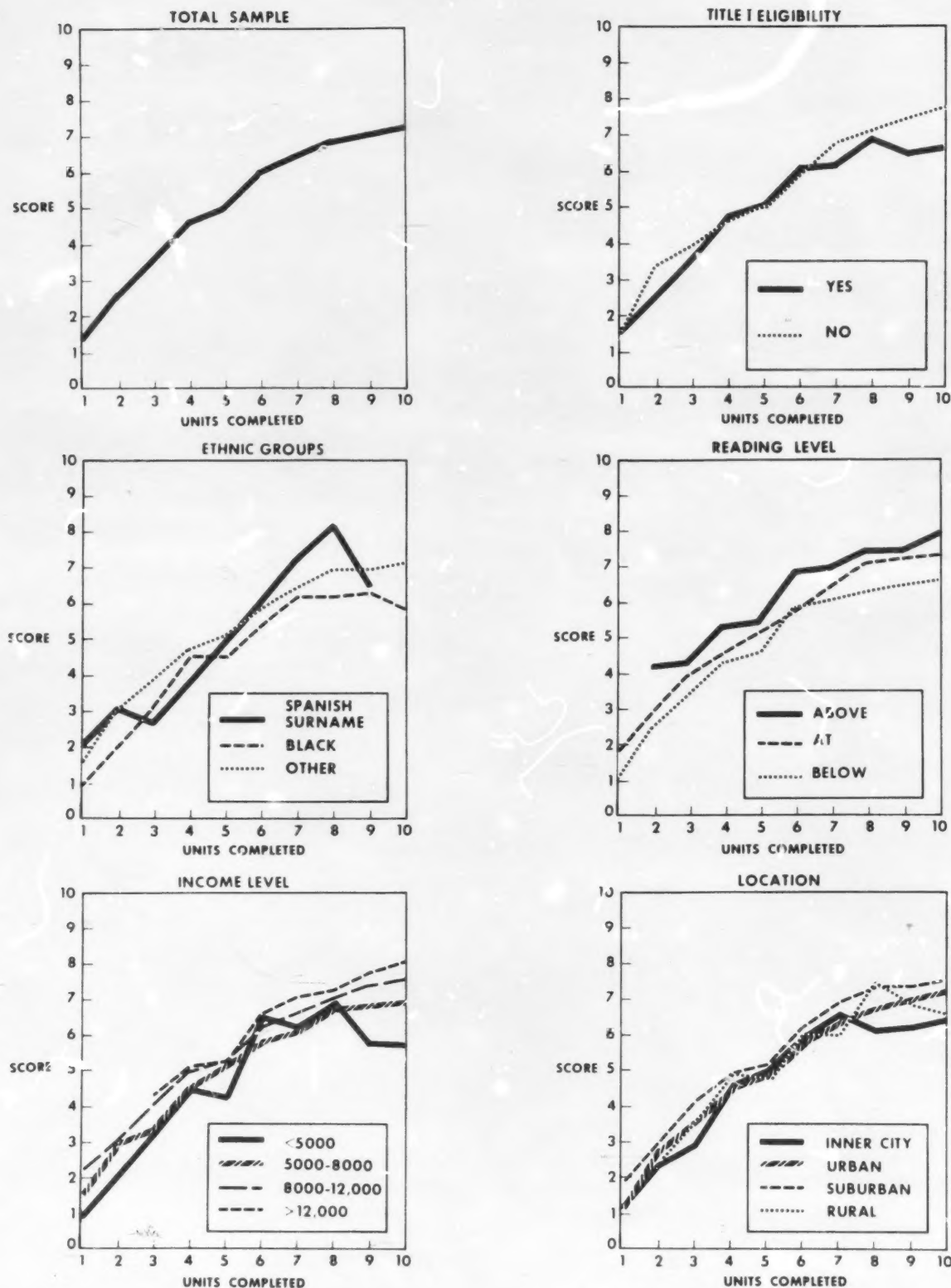


Figure 17: BRP assessment proficiency by units completed:
Sentence Reading.*

* Pure points based on a small number of classes (less than 6) have been omitted.

Table 15

BRP Assessment Proficiency by Units Completed: Letter Names *

	UNITS COMPLETED									
Ethnic Groups	1	2	3	4	5	6	7	8	9	10
Black	3.8/25	4.4/34	4.5/78	4.9/39	5.0/35	5.0/27	5.0/28	5.4/16	5.3/33	5.0/30
Spanish	4.3/7	5.0/8	4.5/13	4.6/12	5.2/10	5.2/13	5.5/13	5.7/8	5.4/8	5.6/5
Other	4.8/21	4.9/107	5.0/213	5.2/219	5.2/224	5.3/277	5.4/260	5.5/265	5.4/327	5.3/295
Income Level										
< 5,000	3.4/14	4.2/44	4.5/67	4.8/32	4.8/44	5.3/31	5.2/37	5.4/21	5.2/46	5.0/36
5 - 8,000	4.7/25	4.8/83	4.9/116	5.0/112	5.2/113	5.2/134	5.3/106	5.4/114	5.3/138	5.4/105
8 - 12,000	5.0/8	5.0/37	5.1/96	5.2/116	5.2/105	5.4/94	5.5/96	5.5/98	5.5/109	5.5/120
> 12,000	4.9/2	5.0/3	5.4/15	5.3/20	5.3/24	5.4/37	5.4/45	5.5/42	5.6/45	5.7/50
Title I Eligibility										
Yes	4.1/30	4.6/120	4.8/197	5.1/158	5.1/155	5.3/157	5.2/137	5.5/126	5.3/184	5.3/166
No	4.5/26	5.0/60	5.0/115	5.1/137	5.2/145	5.3/157	5.4/157	5.5/158	5.5/146	5.6/155
Reading Level										
Above	5.3/2	5.1/9	5.1/46	5.3/48	5.4/50	5.5/74	5.5/68	5.6/75	5.5/93	5.6/99
Same	4.9/14	5.0/42	5.1/79	5.1/97	5.2/90	5.2/106	5.4/117	5.5/97	5.5/126	5.5/123
Below	3.8/33	4.5/100	4.8/157	4.9/122	5.0/127	5.3/114	5.2/98	5.3/98	5.3/126	5.3/85
Location										
Inner City	4.3/17	4.6/39	4.6/62	5.0/37	5.1/46	5.3/34	5.2/36	5.3/29	5.2/47	5.2/32
Urban	3.7/21	4.6/76	4.8/118	5.0/129	5.1/110	5.2/118	5.3/99	5.4/112	5.4/142	5.5/146
Suburban	5.0/14	5.0/41	5.2/104	5.2/103	5.3/93	5.4/132	5.5/116	5.5/103	5.5/115	5.6/96
Rural	5.8/1	4.4/15	4.7/21	5.2/9	5.2/22	5.3/24	5.3/33	5.5/29	5.5/38	5.4/40
Total Sample	4.2/67	4.6/207	4.8/356	5.0/358	5.1/353	5.2/364	5.3/358	5.4/341	5.4/419	5.4/368

*Table entries show: mean/number of classes.

Table 16

BRP Assessment Proficiency by Units Completed: Word Elements*

	UNITS COMPLETED									
Ethnic Groups	1	2	3	4	5	6	7	8	9	10
Black	3.8/25	4.6/34	5.3/78	6.2/39	6.3/55	6.6/27	6.9/28	7.3/16	7.1/33	6.6/30
Spanish	4.6/7	5.6/8	5.4/13	5.5/12	6.7/10	7.1/13	7.9/13	8.3/8	7.5/8	7.9/5
Other	4.9/21	5.7/107	6.3/213	6.7/219	6.8/224	7.3/277	7.4/260	7.6/265	7.6/327	7.7/295
Income Level										
< 5,000	3.3/14	4.5/44	5.5/67	6.0/32	6.1/44	7.3/31	6.9/37	7.5/21	7.0/46	6.6/36
5 - 8,000	4.9/25	5.5/83	5.8/116	6.4/112	6.8/115	7.1/134	7.2/104	7.4/114	7.3/138	7.4/105
8 - 12,000	5.5/8	5.7/37	6.3/96	6.7/116	6.9/105	7.3/94	7.5/96	7.6/98	7.8/109	7.7/120
> 12,000	5.5/2	6.9/3	6.8/15	6.7/20	6.7/24	7.6/37	7.6/45	7.9/42	8.0/45	8.1/50
Title I Eligibility										
Yes	4.3/30	5.1/120	5.8/197	6.5/158	6.6/155	7.3/157	7.1/137	7.5/126	7.2/184	7.2/166
No	4.4/26	5.7/60	6.2/115	6.5/137	6.8/145	7.2/157	7.6/157	7.7/158	7.8/166	7.9/155
Reading Level										
Above	6.3/2	6.1/9	6.5/46	7.1/48	6.9/50	7.8/74	7.7/68	8.0/75	7.9/93	8.0/99
Same	5.3/14	5.7/42	6.2/79	6.5/97	6.8/90	7.2/106	7.4/117	7.5/97	7.7/126	7.7/123
Below	3.6/33	5.1/100	5.8/157	6.3/122	6.5/127	7.0/114	7.0/98	7.3/98	7.2/126	7.2/85
Location										
Inner City	4.6/17	5.0/39	5.5/62	6.2/37	6.6/46	7.0/34	7.3/36	7.0/29	6.9/47	6.9/32
Urban	3.3/21	5.3/76	5.8/118	6.4/129	6.5/110	7.1/118	7.3/99	7.5/112	7.4/142	7.5/146
Suburban	5.0/14	5.6/41	6.4/104	6.7/103	6.8/93	7.3/132	7.6/116	7.8/103	7.7/115	7.8/96
Rural	5.7/1	5.3/15	6.0/21	6.9/9	6.8/22	7.5/24	6.9/33	7.9/29	7.5/38	7.3/40
Total Sample	4.3/67	5.3/207	5.9/356	6.4/358	6.7/358	7.1/364	7.3/358	7.5/341	7.5/419	7.6/368

*Table entries show: mean/number of classes.

Table 17

BRP Assessment Proficiency by Units Completed: Words*

	UNITS COMPLETED									
	1	2	3	4	5	6	7	8	9	10
<u>Ethnic Groups</u>										
Black	5.9/25	7.1/54	8.7/78	10.6/59	11.2/55	12.1/27	12.3/28	13.6/11	13.2/33	12.1/30
Spanish	7.9/7	9.5/8	8.5/13	10.1/12	12.1/10	13.0/13	14.9/13	15.1/8	14.0/8	15.1/5
Other	8.3/21	9.6/107	10.6/213	11.8/219	12.4/224	13.3/277	13.8/260	14.5/265	14.6/327	14.8/295
<u>Income Level</u>										
< 5,000	5.1/14	6.6/44	8.7/67	10.9/32	10.6/44	13.7/31	12.5/37	13.4/21	13.1/46	12.5/36
5 - 8,000	8.0/25	9.3/83	9.9/116	11.1/112	12.4/115	12.8/134	13.5/104	14.3/114	14.1/138	14.1/105
8 - 12,000	8.5/8	9.8/37	10.8/96	11.8/116	12.7/105	13.5/94	14.2/96	14.6/98	15.0/109	15.1/120
> 12,000	8.6/2	12.4/3	11.7/15	12.2/20	12.4/24	14.0/37	14.2/45	14.9/42	15.4/45	15.7/50
<u>Title I Eligibility</u>										
Yes	6.9/30	8.1/120	9.7/197	11.4/158	12.0/155	13.3/157	13.1/137	14.3/126	13.7/184	13.8/166
No	7.2/26	10.0/60	10.6/115	11.5/137	12.4/145	13.2/157	14.2/157	14.6/158	15.2/166	15.3/155
<u>Reading Level</u>										
Above	9.7/2	10.0/9	11.3/46	12.6/48	12.7/50	14.0/74	14.6/68	15.2/75	15.2/93	15.4/99
Same	9.1/14	9.6/42	10.6/79	11.4/97	12.7/90	13.0/106	13.8/117	14.5/97	14.8/126	15.0/123
Below	5.9/33	8.3/100	9.6/157	10.9/122	11.6/127	12.9/114	13.2/98	14.0/98	13.8/126	13.6/85
<u>Location</u>										
Inner City	7.3/17	8.0/39	9.0/62	11.1/37	11.8/46	13.1/34	13.2/36	12.7/29	13.0/47	13.1/32
Urban	5.3/21	8.8/76	9.8/118	11.1/129	11.8/110	12.9/118	13.6/99	14.4/112	14.4/147	14.6/146
Suburban	9.3/14	9.6/41	11.1/104	12.0/103	12.6/93	13.5/132	14.2/116	14.8/103	15.0/115	15.1/96
Rural	11.2/1	13.0/15	9.6/21	11.6/9	12.6/22	13.8/24	12.9/33	15.3/29	14.5/38	14.1/40
Total Sample	7.0/67	8.7/207	10.0/356	11.4/358	12.2/353	13.2/364	13.8/358	14.5/341	14.6/419	14.7/368

*Table entries show: mean/number of classes.

Table 18

BRP Assessment Proficiency by Units Completed: Sentence Reading*

	UNITS COMPLETED									
	1	2	3	4	5	6	7	8	9	10
<u>Ethnic Groups</u>										
Black	4.9/25	2.0/54	3.0/78	4.5/59	4.5/55	5.4/27	6.2/28	6.2/16	6.3/33	5.9/30
Spanish	2.1/7	3.0/8	2.7/13	3.7/12	5.0/10	6.0/13	7.4/13	8.2/8	6.6/8	8.4/5
Other	1.6/21	3.0/107	3.8/213	4.7/219	5.1/224	6.0/277	6.4/260	7.0/265	7.0/327	7.3/295
<u>Income Level</u>										
< 5,000	1.0/4	2.0/44	3.2/67	4.4/32	4.2/44	6.4/31	6.2/37	6.8/21	5.7/46	5.7/36
5 - 8,000	1.5/25	2.8/83	3.3/116	4.4/112	5.0/115	5.7/134	6.2/104	6.7/114	6.7/138	6.8/77
8 - 12,000	2.2/4	3.0/37	4.0/96	4.9/116	5.2/105	6.2/94	6.6/96	7.0/98	7.3/109	7.5/120
> 12,000	4.0/2	5.0/3	4.4/15	4.9/20	5.1/24	6.3/37	7.0/45	7.3/42	7.6/45	8.0/50
<u>Title I Eligibility</u>										
Yes	1.4/30	2.4/120	3.4/197	4.7/158	5.0/155	6.0/157	6.1/137	6.8/126	6.4/184	6.6/166
No	1.3/26	3.3/60	3.8/115	4.6/137	5.0/145	5.9/157	6.7/157	7.1/158	7.4/166	7.7/155
<u>Reading Level</u>										
Above	3.1/2	4.2/9	4.3/46	5.3/48	5.4/50	6.7/74	7.0/68	7.4/75	7.4/93	7.9/99
Same	1.8/14	2.9/42	3.9/79	4.6/97	5.1/90	5.7/106	6.4/117	7.1/97	7.2/126	7.3/123
Below	1.1/33	2.5/100	3.3/157	4.3/122	4.6/127	5.8/114	6.0/98	6.3/98	6.4/126	6.6/85
<u>Location</u>										
Inner City	1.1/17	2.3/39	2.8/62	4.4/37	4.9/46	5.9/34	6.5/36	6.1/29	6.2/47	6.4/32
Urban	1.1/21	2.7/76	3.4/118	4.5/129	4.8/110	5.7/118	6.3/99	6.7/112	6.9/142	7.2/146
Suburban	1.8/14	2.9/41	4.1/104	4.8/103	5.2/93	6.2/132	6.8/116	7.3/103	7.3/115	7.5/96
Rural	3.0/1	2.4/15	3.5/21	4.8/9	4.8/22	6.0/24	6.0/33	7.4/29	6.8/38	6.5/40
Total Sample	1.3/67	2.6/207	3.5/356	4.6/358	4.9/353	5.9/364	6.4/358	6.8/341	7.0/419	7.2/368

*Table entries show: mean/number of classes.

Units Completed as a Function of Instructional Time

It could be argued that because "disadvantaged students" are "slow learners" they require greater instructional time to complete the BRP units than "normal students." Figure 18 and Table 19 indicate that this is not so. For equivalent numbers of instructional days, equivalent units were completed across biosocial categories. Conceivably, teachers could have spent time differentially within a day with various groups, but reducing the degree of instructional "retardation" to "hours" and "days" rather than "months" and "years," removes all basis for applying "slow learner" stigma to any of the biosocial categories. Instruction with BRP delivered the same performance in the same amount of calendar time for users from all the biosocial categories.

Instruction Received as a Function of Entering Proficiency

Figures 19-20 and Tables 20-21 examine the patterns of units completed and instructional time for classes with various initial levels of pupil proficiency as indicated by the Entry Survey. Figure 19 and Table 20 show that for the total sample of classes the average number of units completed tends to be comparable for all Entry Survey levels. Approximately seven units were completed by classes from each of the nine Entry Survey intervals. Considering the participant population is weighted more heavily with pupils from groups which characteristically have lower achievement levels, the fact that even classes with entering skills in the lowest 10% of this population proceeded to complete as much of the program as classes with the highest levels of entry skills is remarkable and demonstrates the robust instructional effects attainable with BRP.

Examination of the pattern of units completed within the biosocial categories provides more direct information on the differential performance attained by them. These data indicate that there are systematic differences in the number of units completed by various user categories. For example, pupils in schools which typically score above the national norms on standardized reading tests tend to complete about two full units more than schools scoring below the national norm, within each Entry Survey level. This disadvantage is slightly greater than two units for classes in the Entry Survey categories with means less than 11.0 and slightly less than two units for those with Entry Survey means greater than 13.0. A similar pattern holds across the ethnic, income, and location groups. In each case, the users in the categories which typically have lower levels of achievement, i.e., income \$5,000, inner city and Black, were "disadvantaged" by receiving fewer units of instruction on the average than those in typically higher achieving groups, i.e., income \$12,000, suburban, and non-minority.

The data in Figure 20 and Table 21 suggest that the differences observed in the units completed by the various user groups can best

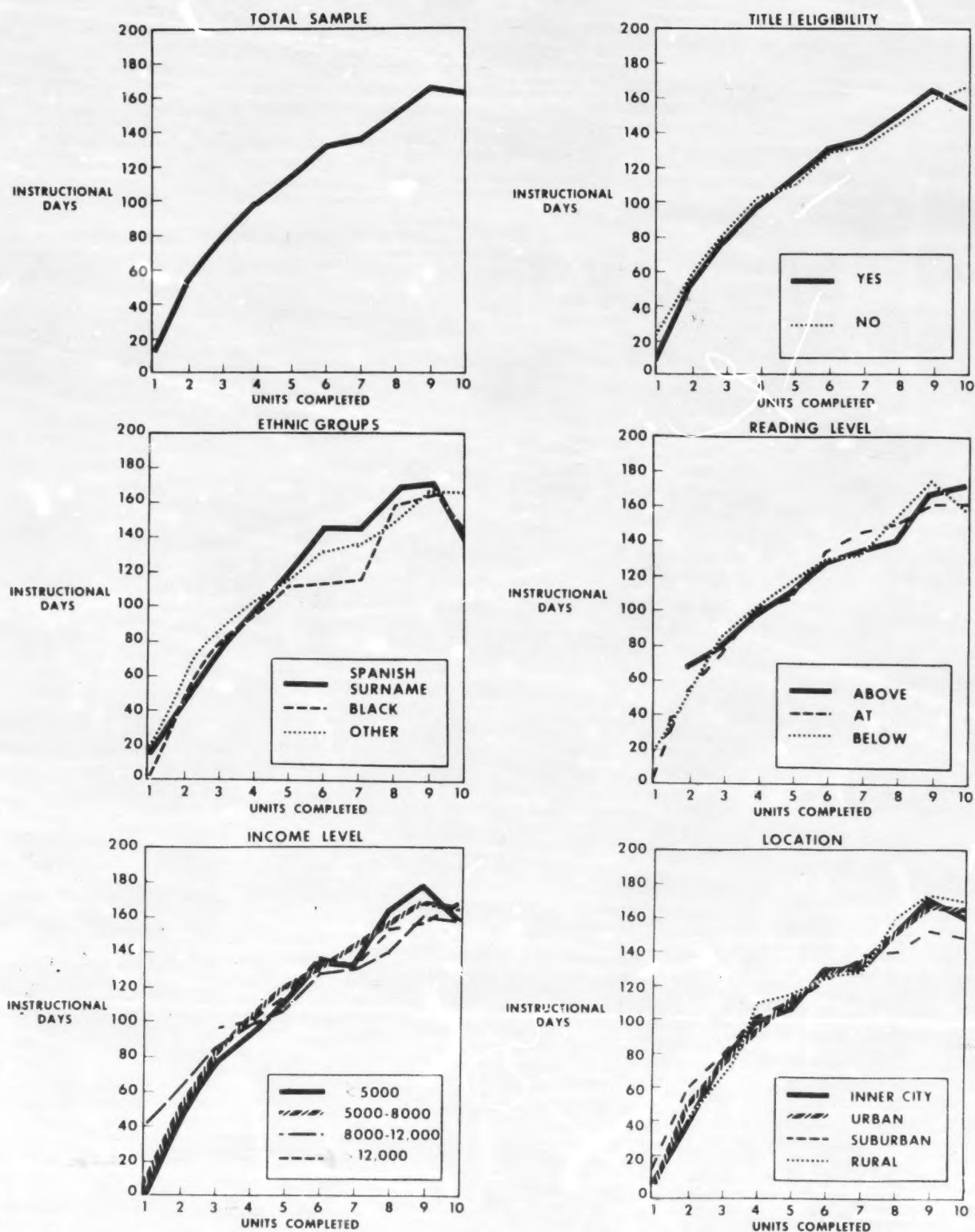


Figure 18. BRP instructional days by units completed. *

*Figure points based on a small number of classes (less than 6) have been omitted.

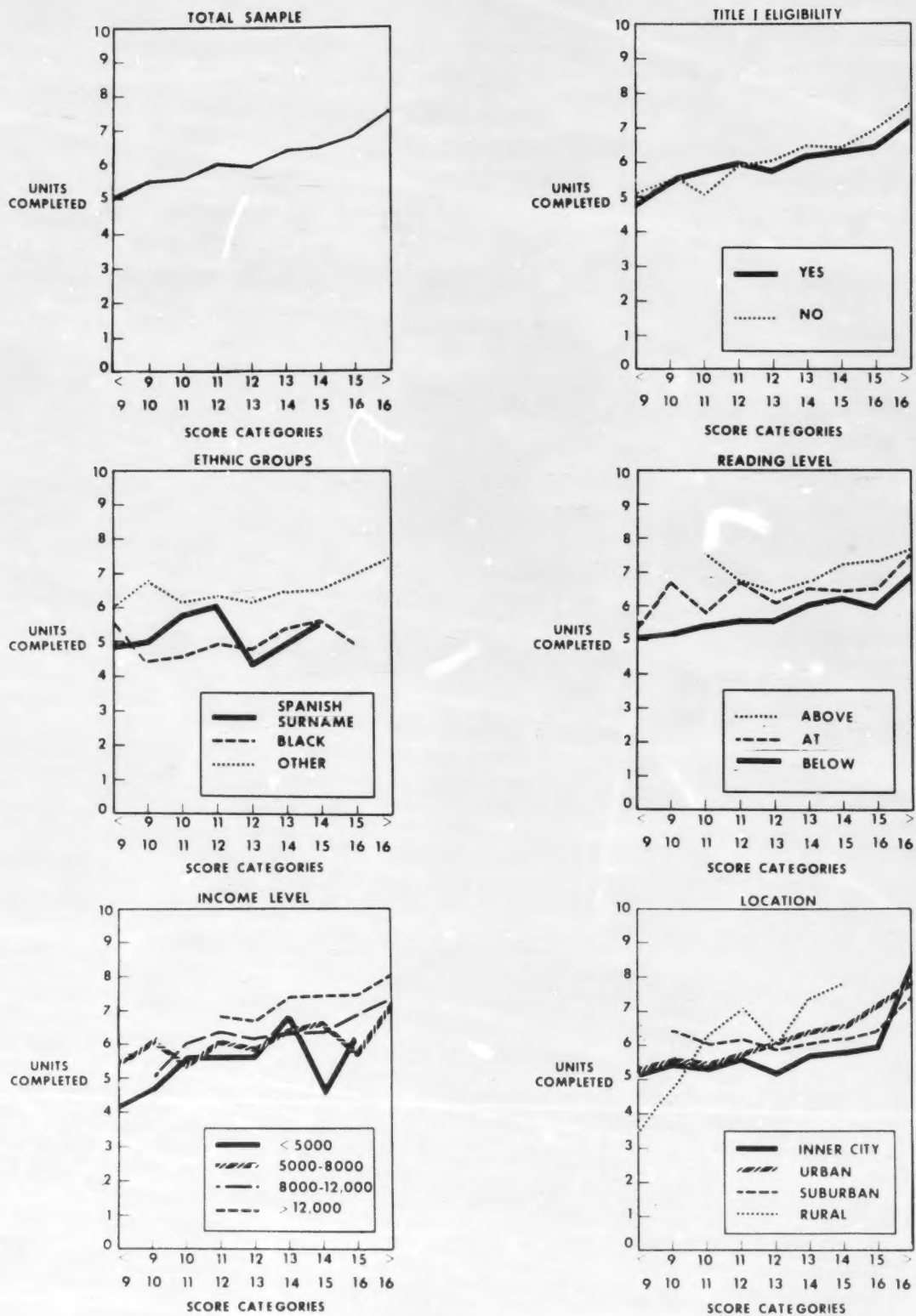


Figure 19. BRP units completed by Entry Survey score categories.*

*Figure points based on a small number of classes (less than 6) have been omitted.

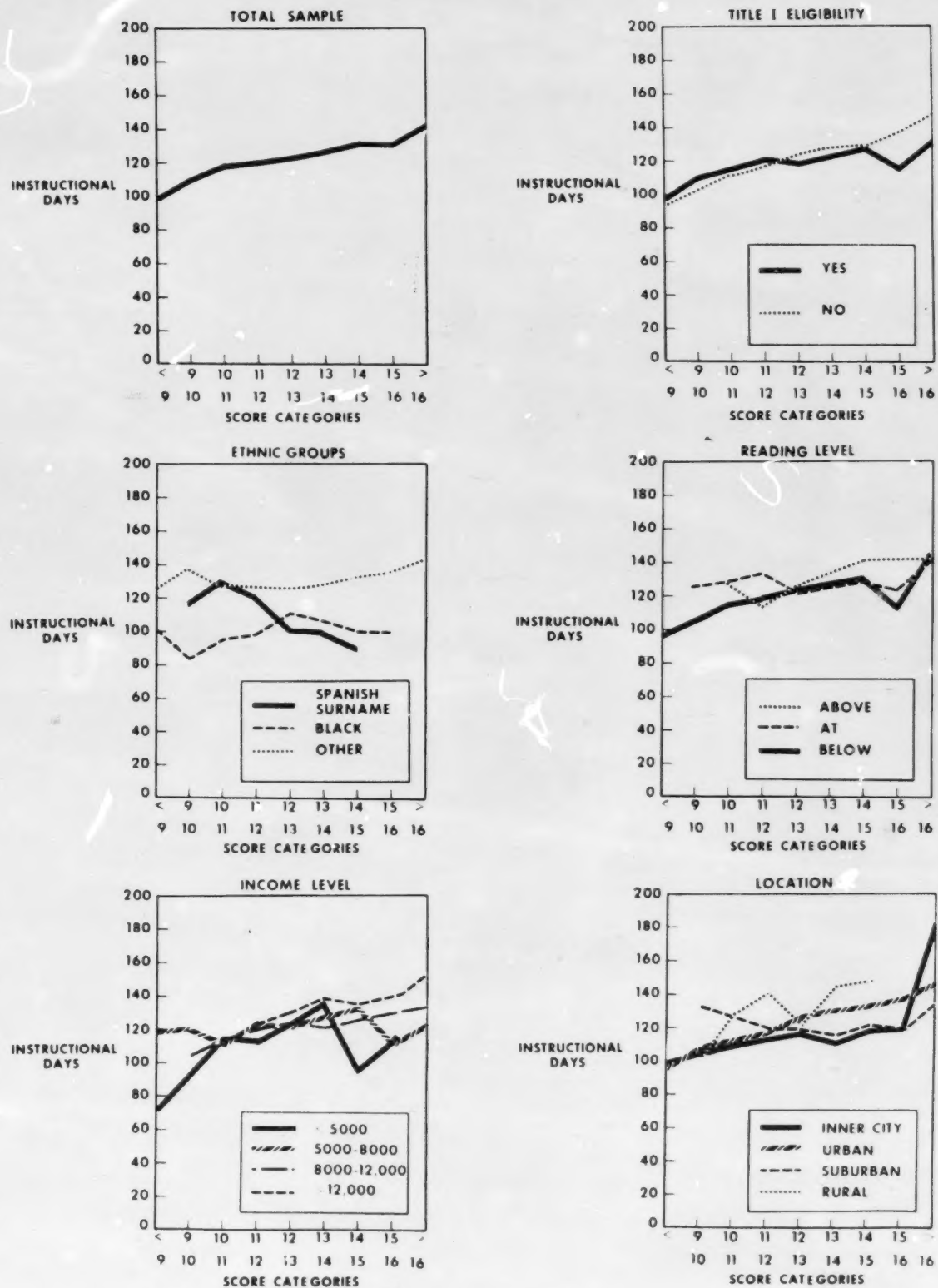


Figure 20. BRP instructional days by Entry Survey score categories. *

*Figure points based on a small number of classes (less than 6) have been omitted.

Table 19

BRP Instructional Days by Units Completed*

	UNITS COMPLETED									
	1	2	3	4	5	6	7	8	9	10
<u>Ethnic Groups</u>										
Black	1/13	46/54	76/74	93/58	112/56	113/27	118/29	157/16	166/32	141/31
Spanish	19/6	42/10	69/13	98/12	119/9	142/13	142/11	165/8	170/8	140/6
Other	20/20	58/90	83/197	101/215	113/225	133/272	137/265	148/262	165/325	165/30
<u>Income Level</u>										
< 5,000	2/9	44/45	76/60	90/30	110/48	133/33	130/39	160/21	176/45	156/37
5-8,000	8/22	52/79	79/114	102/112	118/116	132/135	141/106	154/112	165/137	163/108
8-12,000	41/8	61/28	82/90	99/116	106/103	128/92	131/98	138/96	159/111	155/125
> 12,000			99/10	102/19	109/24	133/36	129/46	155/43	155/44	165/49
<u>Title I Eligibility</u>										
Yes	8/24	51/114	79/190	97/150	113/156	131/158	136/137	150/127	164/180	154/175
No	22/16	56/51	80/102	102/138	110/144	129/153	132/161	146/154	161/168	166/154
<u>Reading Level</u>										
Above		68/8	79/40	97/45	111/49	128/69	134/74	141/74	167/93	172/100
Same	6/14	54/35	76/77	100/96	108/90	134/104	144/114	148/96	162/126	163/126
Below	20/21	54/92	84/146	101/123	115/128	130/113	131/98	154/97	173/124	159/90
<u>Location</u>										
Inner City	13/10	42/40	78/58	101/34	108/46	132/35	132/35	151/27	171/46	162/33
Urban	12/13	54/64	79/114	95/125	115/110	130/117	133/106	151/110	166/141	164/146
Suburban	18/14	63/35	80/92	104/105	108/93	128/130	133/114	142/104	153/113	149/103
Rural		48/18	74/21	112/8	110/23	139/23	138/33	158/29	173/38	165/40
<u>Total Sample</u>	13/41	52/165	79/296	99/295	112/305	131/317	135/312	149/294	165/377	162/349

*Table entries show: mean/number of classes.

Table 20

BRP Units Completed by Entry Survey Score Categories*

	ENTRY SURVEY SCORE CATEGORIES									
	<9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	>16	
<u>Ethnic Groups</u>										
Black	5.2/29	4.6/52	4.6/77	4.9/87	4.8/76	5.4/39	5.6/11	5.0/11	7.0/2	
Spanish	2.8/6	5.3/14	5.8/14	6.1/21	4.4/19	4.9/12	5.6/8	3.0/3	9.0/1	
Other	6.0/19	6.8/54	6.2/143	6.3/114	6.2/462	6.5/515	6.6/381	7.0/176	7.5/94	
<u>Income Level</u>										
< 5,000	4.3/29	4.9/44	5.5/73	5.6/77	5.6/64	6.7/40	4.7/16	6.2/14	7.4/5	
5-8,000	5.8/22	6.2/61	5.3/134	6.0/214	5.8/249	6.3/163	6.6/101	5.7/24	7.1/15	
8-12,000	7.3/3	5.0/8	6.0/27	6.3/109	6.1/188	6.3/261	6.3/180	6.8/72	7.3/34	
> 12,000	4.0/1	5.0/2	8.8/4	6.7/10	6.6/37	7.1/49	7.1/66	7.1/64	7.9/33	
<u>Title I Eligibility</u>										
Yes	4.9/47	5.7/92	5.7/172	6.0/272	5.7/304	6.2/263	6.3/151	6.4/68	7.2/34	
No	5.1/10	5.6/29	5.1/72	5.9/161	6.1/254	6.5/298	6.4/234	6.9/116	7.7/54	
<u>Reading Level</u>										
Above	6.0/2	7.5/2	7.6/8	6.6/43	6.4/75	6.7/137	7.2/131	7.3/93	7.6/55	
Same	5.2/6	6.7/19	5.8/47	6.7/115	6.1/207	6.5/217	6.4/173	6.5/72	7.5/28	
Below	5.1/43	5.3/82	5.4/169	5.6/237	5.6/220	6.0/166	6.2/68	5.9/18	6.8/10	
<u>Location</u>										
Inner City	5.1/21	5.6/27	5.3/66	5.6/87	5.2/78	5.7/41	5.8/28	5.9/10	8.3/6	
Urban	5.1/28	5.6/64	5.4/105	5.7/162	6.1/201	6.4/208	6.6/149	7.2/66	7.8/29	
Suburban	6.0/2	6.4/18	6.1/42	6.2/127	5.9/196	6.1/226	6.2/165	6.4/99	7.4/51	
Rural	3.4/5	4.7/6	6.3/21	7.1/40	6.1/60	7.4/59	7.8/27	8.8/4	5.3/3	
<u>Total Sample</u>	5.0/58	5.7/123	5.6/252	6.0/447	5.9/573	6.4/575	6.5/408	6.8/195	7.6/100	

*Table entries show: mean/number of classes.

Table 21

BRP Instructional Days by Entry Survey Score Categories*

	ENTRY SURVEY SCORE CATEGORIES									
	<9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	>16	
<u>Ethnic Groups</u>										
Black	101/28	84/50	95/70	97/84	111/70	108/37	100/10	100/10	115/2	
Spanish	52/5	117/13	130/14	121/20	101/17	100/11	90/8	87/3	196/1	
Other	126/17	137/52	129/140	127/299	126/438	128/493	134/355	134/164	142/91	
<u>Income Level</u>										
< 5,000	72/26	98/42	114/66	113/74	122/62	137/37	95/16	112/13	142/5	
5-8,000	119/22	120/59	112/130	123/206	121/234	127/187	132/99	112/33	112/15	
8-12,000	153/3	103/8	114/27	120/103	122/179	120/248	126/159	129/68	134/34	
> 12,000	94/1	87/2	152/4	122/10	131/36	139/46	134/63	139/60	155/31	
<u>Title I Eligibility</u>										
Yes	97/44	111/89	115/163	121/260	118/290	122/256	127/143	116/63	131/36	
No	94/9	103/28	112/69	115/156	124/238	128/280	127/215	136/108	147/52	
<u>Reading Level</u>										
Above	130/2	138/2	128/8	114/41	126/73	133/132	142/121	142/90	143/52	
Same	123/5	125/18	128/47	134/111	123/195	126/208	129/159	123/65	142/28	
Below	98/40	105/80	114/158	118/225	123/206	126/158	130/65	113/15	145/10	
<u>Location</u>										
Inner	99/21	105/24	108/62	118/82	116/74	111/40	117/27	118/10	181/6	
Urban	98/25	107/63	112/101	116/157	126/193	130/197	132/140	136/60	146/29	
Suburban	123/2	133/17	126/41	120/121	119/181	116/215	122/149	121/92	135/49	
Rural	68/4	102/6	127/20	140/38	122/57	144/58	147/27	157/4	67/3	
Total Sample	99/54	111/119	117/240	120/430	122/542	126/550	132/380	131/182	142/97	

*Table entries show: mean/number of classes.

be accounted for by the number of days spent on BRP instruction by the various user subgroups. Because of the scale used in the graph, the differences in days appear small. However, the differences are operationally large. For example, in the case of the Black ethnic group as compared to "others," the average difference in instructional days ranges from 25-53 days or between 5 and 10 weeks of BRP instruction for classes with the same entry proficiency.

The data consistently support the explanation that the differences in BRP performance among the various categories of users results from differences in the number of days spent on BRP instruction rather than any differential effectiveness of the program for pupils with different biosocial characteristics. BRP appears to work as efficiently or more efficiently with users in the typically lower achieving user categories as with other groups.

These cumulative data indicate that "educationally disadvantaged" is either a fiction or a creation of manipulable and manipulated conditions readily under the control of schools rather than a condition resulting from immutable genetic and environmental factors which inherently impede schooling. The manipulations can be achieved by instructional planning by school personnel. Specific suggestions in this regard have been communicated by SWRL in the form of QA Report Interpretation Guides and through a KP Instructional Improvement Kit.

BREAKTHROUGH OR ARTIFACT?

The results of this inquiry provide evidence that professional advances in education can be visibly demonstrated through programmatic R&D which produces useful educational products. The education community is unaccustomed to state-of-the-art advances and has no experience in handling such. It is also unaccustomed to the benefits of programmatic R&D. Were findings analogous to those reported here obtained in health, for example, the profession would respond with orderly publicity for reasonable R&D to broaden the advance. Breakthroughs are routine in health.

Conventions are markedly different in education. The traditional reaction in education is to discount and discredit the findings of any study. Recognizing this tradition, we have attempted to address it responsibly in several ways: by being as critical as possible ourselves before interpreting the findings, by presenting the data fully, by withholding "press releases" directed to media popularization, and by archiving the data in a form readily amenable to analysis by scientists, scholars, and critics.

Our conclusion is unequivocal. The results demonstrate to us that schools as well as students have the inherent potential for creditable and credible instructional success. Programmatic R&D in education can provide the necessary wherewithal to realize this potential with important and impressive results for both students and schools. With well-developed instructional products produced by programmatic R&D, alleged biosocial deficiencies of students either prove fictional or readily circumventable. In sum, good R&D makes possible good instruction by schools, which makes possible good performance by students. If the interpretation of the inquiry is an artifact of our analysis, we have every faith that the misinterpretation will be corrected. To aid and abet this self-corrective process, we shall make available the findings of other facets of the overall two-year QA design as rapidly as possible within the next few months.

If the findings reported here are not spurious, programmatic R&D has strong positive effects on schooling, and schooling coupled with programmatic R&D has strong positive effects on students. The public

policy implications of such a conclusion for R&D and education would be clear. They point to a radical reform of public policy relying on present education and research knowledge rather than a radical reform of public education relying on policy research that has not yet been conducted. With well-developed products, both the educational R&D community and the school community are prepared to "talk performance."

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